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Worldwide Report

TELECOMMUNICATIONS POLICY, RESEARCH, AND DEVELOPMENT

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20 March 1986

WORLDWIDE REPORT

TELECOMMUNICATIONS POLICY, RESEARCH AND DEVELOPMENT

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JAPAN

FINANCE MINISTRY APPROVES BANK 'VAN' SERVICES

OW201339 Tokyo KYODO in English 1209 GMT 20 Feb 86

[Text] Tokyo, Feb 20 KYODO--The Finance Ministry Thursday allowed banks to start "value-added network" (VAN) services for providing sophisticated information related to funds and accounting to customers.

Four major commercial banks, including Dai-ichi Kangyo Bank, have already set up subsidiaries for undertaking "VAN" services and registered them with the Posts and Telecommunications Ministry. But the Finance Ministry has withheld permission pending formulation of unified standards for "VAN" services of financial institutions. "VAN" services of banks are limited primarily to supply of information pertaining to funds and accounting. They are thus barred from undertaking large-scale "VAN" services projected by Nippon Telegraph and Telephone Corp. (NTT) and other firms.

The "VAN" service links different computer systems to provide sophisticated information. As a result, banks will now be able to supply a variety of high-priced information services, such as electronic mail, in addition to simple calculation service. The Finance Ministry has been easing curbs on various computerized banking services, including settlement by personal computer.

/9365

CSO: 5560/117

JAPAN

BRIEFS

BROADCAST SATELLITE LAUNCH POSTPONED--Tanbeashima, Kagoshima Pref., 11 February KYODO--Bad weather Tuesday forced the third postponement of the launch here of a broadcast satellite, the National Space Development Agency reported. Agency officials said the launch of Satellite B52b was put off until 4:56 p.m. Wednesday [120756 GMT] after warnings of a thunderstorm over the launch center. [Text] [Tokyo KYODO in English 0529 GMT 11 Feb 86 OW] /12913

CSO: 5560/105

PEOPLE'S REPUBLIC OF CHINA

REPORTAGE ON SECOND TELECOMMUNICATIONS SATELLITE LAUNCH

Guided Into Orbit

HK210440 Beijing CHINA DAILY in English 21 Feb 86 p 1

[Article by staff reporters Liu Dizhong and Wang Gangyi]

[Text] China's second telecommunications satellite was successfully guided into permanent orbit at 5:00 pm Beijing time yesterday.

Launched into space by the nation's most advanced three-stage Long March-3 carrier rocket on 1 February, the satellite reached a geostationary position at 103 degrees E longitude over Sumatra, Indonesia, 35,786 kilometres from the earth.

The satellite is functioning perfectly for telecommunications, radio and television transmission and will be put into regular service soon, said an army officer of the command centre of the Commission of Science, Technology and Industry for National Defense.

The Central TV Station and the Central Broadcasting Station actually began transmitting news programmes last night via the satellite, the officer told CHINA DAILY. Satellite ground stations nationwide, including those in Gansu, Sichuan, Guizhou, Yunnan, Xinjiang, Tibet and other remote areas, reported "excellent results" in reception.

The party's Central Committee, the State Council and the Central Military Commission yesterday sent a joint message of congratulations to the scientists, engineers and workers involved in the project.

The successful positioning of the satellite, said the messages, showed that China had fully mastered the design and launch technology of carrier rockets and the techniques of tracking and controlling communications satellites.

It also showed that China's satellite communications had moved from the experimental-stage into the application stage, the message added.

"This achievement is of great significance in speeding up the nation's modernization drive and developing its space technology," it said.

The message urged all those involved in the project to work for new progress in communications, broadcasting and space technology.

China has launched 18 satellites of various types over the last 26 years. Its first telecommunications satellite was sent into space in April 1984 and was also placed in permanent orbit over Indonesia.

The new telecommunications satellite has been improved to raise efficiency, particularly to enlarge its telecommunications capacity, said Ding Henggao, minister of the Commission of Science, Technology and Industry for National Defense, in an exclusive interview with CHINA DAILY.

Plans have been made to launch more telecommunications satellites in future and efforts will be made to lengthen their service life, position them more accurately, and enlarge their telecommunications capacity, Ding said.

Other satellites will be launched to improve the nation's weather forecasting, natural resource surveying and in other areas, he said.

A long-term programme to develop China's space industry was being discussed, with emphasis on self-reliance, the minister disclosed.

But, he stressed, technological cooperation and exchanges with foreign countries would definitely be expanded.

Last night, vice premiers Tian Jiyun and Li Peng, and PLA leaders Yang Dezhi, Yu Qiuli, Zhang Aiping and Hong Xuezhi watched a TV and broadcasting transmission test at a satellite ground station in the suburbs of Beijing.

Transmission Quality 'Good'

OW202040 Beijing XINHUA in English 1958 GMT 20 Feb 86

[Text] Beijing, 20 Feb (XINHUA)--China's second telecommunications and broadcasting satellite, launched on 1 February and placed in its permanent orbit above the earth's equator today, proved to be good in transmitting TV and radio programs this evening.

Tests showed that TV pictures were clear, colors were bright and sound quality was good.

Satellite experts said that any part of the country can receive the TV and radio programs transmitted by the new satellite with a six-meter antenna.

Satellite ground stations in Hebei, Shanxi, Shaanxi, Gansu, Jiangsu, Shanghai, Hunan, Sichuan, Guizhou, Yunnan, Tibet and Xinjiang were reported to have received the CCTV program via the satellite.

Central Organs Congratulate Personnel

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OW200926 Beijing XINHUA in English 0912 GMT 20 Feb 86

[Text] Beijing, 20 Feb (XINHUA)--The Chinese Communist Party Central Committee, State Council and Central Military Commission today jointly congratulated scientists and research workers on the successful positioning of China's second telecommunications and broadcasting satellite.

This success marks the fact that China has fully mastered carrier rocket technology, and that its satellite communications have moved from the experimental stage into the application stage, the message says.

"While encouraging the Chinese people of all nationalities tremendously, the achievement will significantly speed up the country's socialist modernization drive and help further develop its space technology," it adds.

The message attributes the success to the hard work of the scientists and workers who participated in the launch, tracking and control of the satellite.

"We must work even harder to make new contributions to the development of the country's communications, broadcasting and space technology," the message says.

'Performance Better Than First'

OW241112 Beijing XINHUA in English 1058 GMT 24 Feb 86

[Text] Beijing, 24 Feb (XINHUA)--China's second telecommunications and broadcasting satellite is performing better than the first, Astronautics Ministry officials said here today.

With the parabolic antenna to restrict its range to the territory of China, the second satellite is sending back stronger signals than the first one, which covers one third of the whole earth. This has greatly helped improve the reception of TV pictures, the officials said.

The communication capacity of the second satellite is five to six times that of the first.

China launched its second telecommunications and broadcasting satellite 1 Feb and placed it above the earth's equator 20 February.

/6662

CSO: 5500/4144

PEOPLE'S REPUBLIC OF CHINA

XICHANG SATELLITE LAUNCH CENTER

HK230539 Beijing ZHONGGUO XINWEN SHE in Chinese 0317 GMT 20 Feb 86

[Report by Lin Hua [2651 5478]: "The Mysterious Valley--A Visit to China's Xichang Satellite Launch Center"--ZHONGGUO XINWEN SHE headline]

[Excerpts] Xichang, 20 Feb (ZHONGGUO XINWEN SHE)--Toward the end of the lunar year, grass begins to grow again. On the eve of the spring festival, a vast expanse of land to the north of Huang He was still covered by snow. However, the hinterland of Mt Liangshan, which is 1,800 meters above sea level and is the site of Xichang Satellite Launching Center, was another world in which the mountains were a dark green color. I was filled with wonder when arriving at this misty valley in the remote mountains, facing the towering spaceflight launching tower.

"The Best Window for Launching"

It is not easy to find the best place for building a launching tower in the vast 9.6 million square meters territory of China. Fifteen years ago, after exploration, aerial survey and hydrogeological investigation, Chinese scientists found this place in southwest Sichuan, which is a low latitude area with an ideal climate and a good angle for launching. The weather is like spring all the year round, being sunny and warm. It was learned that the weather in the nearby mountains was always cloudy and rainy, but this place was always fine and sunny. According to experts, the first four months of the year were the most opportune time for launching space carrier rockets because both the high altitude weather and the inclination of the earth's axis were favorable to launching. Therefore, the place was nicknamed "the best window for launching". Here I saw giant radars on the top of a misty hill, with antennae pointing at the sky in different directions. These antennae continuously probe the sky, and transmit various kinds of data and information to the ground station.

Modernization and the Semi-Civilized

The buildings of the spaceflight base were scattered on the slopes of the valley. Each quiet night, the stars in the sky and the lights on the ground add radiance and beauty to each other. With a gurgling mountain stream, the atmosphere was so impressive that it made one think of being in a mythical world.

All buildings here carried codes. The guesthouse we lived in was coded "No 2". The tall "No 5" plant was where the rockets underwent "thorough checks" after being delivered by rail from places far from here. The "No 6" building was the control hall which controlled the bases air-conditioning. Others, like the meteorological observatory, communications center, computing center and the laser motion picture transit [jiguang dianying jingweiyi 3423 0342 7193 1758 4842 4885 0308] also had their codes. In the base were modern building modern technological facilities and the people who supervised advanced science and technology for national defense. However, there were clay walls and huts scattered on the nearby slopes and along the road. They were the haunts of the Yi nationality, had "Cha'er Wa" (cloaks) draped over their shoulders, and carried with them their social customs and tradition. The Yis were very superstitious in some areas. Their living standards were poor and they received little education. They called the launching of space rockets as "firing white cannons." After the construction of the spaceflight base began, the prospects for minority nationalities living nearby became unprecedentedly bright. Because of ease access and the improvement of conditions for tilling farmland, the Yi villagers living near the base have income increased year after year. Before long, the Yis living on Mt Liangshan no longer practiced slash-and-burn cultivation but pursued such commodities as bicycles, television sets and radio-cassette recorders. They had changed their living style from a semi-civilized to a modern one.

Xichang Opens to the Outside World

Xichang City is the seat of government of Liangshan Yi Nationality Autonomous Prefecture. It is also the living area of the satellite launching center. Scientific and technological personnel, experts and workers often travelled by shuttle bus to and from the base some 100 kilometers from the city. There is a flat asphalt road link to the valley. Scattered along the road are cottages and farmland surrounded by green bamboo. An experienced leader of Xichang Satellite Launching Center spelled out to me the prospects for the base. He said that the United States spaceflight center was in Houston, and the Xichang launching center would become the Houston of China. Following our recent success in launching a practical communications satellite, we planned to open the base to the outside. Satellite users from overseas would be welcome to visit here and negotiate business concerning the launching of satellites. In addition to having spaceflight facilities, Xichang City, nicknamed "little Kunming," is rapidly developing tourism. This mysterious valley will win worldwide appraisal with its unique glamor.

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CSO: 5500/4145

PEOPLE'S REPUBLIC OF CHINA

MICROWAVE SYSTEM BUILT BETWEEN GUANGZHOU, HAIKOU

HK120932 Beijing ZHONGGUO XINWEN SHE in Chinese 1357 GMT 29 Jan 86

[Text] Guangzhou, 29 Jan (ZHONGGUO XINWEN SHE)--The 1,800-circuit microwave communications system between Guangzhou and Haikou, a communications trunk line of big capacity built on the basis of using foreign funds to import Japanese equipment, was put into trial operation in late January. It is expected that the project will be handed to the user unit and be put into official use in mid-February.

This microwave communications system is designed by domestic units, and the main equipment--a 1,800-circuit microwave trunk line--is imported from Japan. Other supporting equipment, such as the carrier equipment, the power supply equipment, and microwave relay equipment, is all made by Chinese manufacturers. The whole system is automatic and does not need any human operators. It is monitored and controlled by a computer. The computer terminals can record and print the work processes of the communications system. The monitor screens can show the conditions of the whole line and all relay points.

This communications line passes through Huaxian County, Zhaoqing City, Gaoyao County, Yunfu County, Xinyi Country, Maoming City, Huazhou County, Zhanjiang City, Suixi County, Haikong County, and Xuwen County, then crosses the Qiongzhou strait and reaches Haikou City, with a length of 596 kilometers. After the line is put into use, the long-distance communications network in the western Guangdong area and Hainan Island will be linked to established microwave circuits in eastern Guangdong, between Guangdong and Guangxi, between Guangzhou, Shenzhen, and Hong Kong, and to the coaxial cable from Beijing via Wuhan to Guangzhou. The western Guangdong area will then have convenient long-distance telephone services to Hong Kong, Macao, and other large cities in China. Direct dialing in these long-distance telephone calls can also be realized. The new communications system can also be used to convey telex messages, data, newspapers, and photographs. It will be linked to the inner-island digital microwave circuit which is now under construction, and will then extend to Sanya City.

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CSO: 5500/4145

20 March 1986

PEOPLE'S REPUBLIC OF CHINA

METEOR-BURST COMMUNICATIONS SURVEYED

Nanjing DIANLI XITONG ZIDONGHUA [AUTOMATION OF ELECTRIC POWER SYSTEMS]
in Chinese Vol 8, No 2, Mar 84 pp 48-56

[Article by Jiang Xianning [1203 0752 1337], Power Research Institute,
Ministry of Water Resources and Electric Power, and Wang Zhenzhuang
[3769 7201 8269], Nanjing Automation Institute: "A Survey of Meteor-
Burst Communications"]

[Text] Meteor-Burst Communications

With the rapid development of mini- and microcomputer technology, transmission involving brief reflection of radio signals from meteor trails has become an important means of long-range digital communication. The characteristics of such systems are: (1) at distances of up to 2000 km they are not subject to terrain limitations and direct point-to-point communication without repeater stations is possible, so that they have clear economic advantages; (2) transmission is stable and the channels are not affected by ionospheric noise, auroras, sunspot activity, or nuclear [as published] magnetic pulses produced by nuclear explosions; (3) the system structure is flexible, allowing ground-to-ground or ground-to-air communication with either fixed or mobile stations, and either single channels or systems that include hundreds of remote stations can be used; (4) meteor-burst communication uses intermittent, randomly appearing paths, and each transmission is completed within a few hundred milliseconds, offering excellent security. As a result, these systems are already used by many countries for civilian and defense communications.

Meteor-burst communication, also called meteor-scattering or meteor trail communications, uses the reflection of radio signals by the ionized trail of meteors for communications purposes. This type of transmission was first discovered in the late 1940's or early 1950's, but at that time computer technology was in its infancy and there was no way of using this intermittent phenomenon for communications, so that it received only brief descriptions in communications textbooks. In the middle 1970's, with computer technology developing rapidly, the United States, European countries and the

Soviet Union conducted large-scale, fruitful research on the mechanism and laws of meteor-burst transmission of radio signals and used computers to develop special communications forms suited to meteor-burst communications which stored and buffered the intermittent random signals and detected and corrected errors, thus producing a new digital communications technology. In meteor-burst communication systems a master station and many remote stations form star networks. In addition, several master stations can be formed into a repeater system of the store-and-forward type, resulting in a large-scale data network with any desired number of remote installations. Systems of this type are used for long-range, scattered, wide-area data acquisition networks and for exchange channels. They can transmit all kinds of digital data; text, stationary image information and the like. Remote installations can be combined with tracking equipment to perform vehicle, ship or aircraft tracking. When these systems are in operation, the master station sends out an address and command signal which is reflected to the remote station by a suitable meteor track; when the remote station receives the signal, if the address is correct it is ordered to start up its own transmitter and send waiting data to the master station via the path already established. Because each meteor burst lasts only a fraction of a second, continuous data must be broken up into several blocks for transmission, continuously taking advantage of new meteor trails.

Types of Meteor Trails and Their Formation

Meteors, or space dust, are extraterrestrial material that orbits the sun with a specific period and has elliptical orbits largely similar to that of the earth. Everyone is familiar with the magnificent phenomenon of meteor showers, in which groups of meteors distributed over their orbits with various densities collide with the earth. Their appearance follows regular patterns. Meteor showers represent only an extremely small proportion of the total number of meteors observed. Those that can be used to reflect radio signals for communication purposes are numerous, irregularly appearing single meteors (the term "irregular" indicates their randomness and unpredictability).

In the earth's orbit, some meteors are swept up by the earth, while others catch up with it; when their relative speeds reach 10-75 km/sec, the kinetic energy with which the meteors enter the atmosphere is released during collisions with air molecules and converted to large amounts of heat, which vaporizes molecules on the surface of the meteor; these continue to experience friction with air molecules, so that they lose their outer electrons and become ionized. In this way, a tail consisting of groups of positively charged ions and free electrons forms behind the meteor; we call it a meteor trail.

Research has shown that the factor causing reflection of radio signals is the effective surface area of the charged ions in the trail, which is generally denoted by σ . The equation is

$$\sigma = \frac{8}{3} \pi (e^2 / m \cdot C^2)^2$$

where E is the charge, m is the mass of the charged ions, and C is the speed of light. Calculations indicate that the value of σ for electrons is 10^9 times that for oxygen and nitrogen ions. Thus the free-electron cloud in meteor trail is the key factor in the reflection of radio waves. The meteor trails can therefore be classified in terms of the initial linear electron density (i.e. the number of free electrons per unit path). As a rule the linear electron density in usable meteor paths is between 10^{10} 10^{16} electrons/meter. It is generally denoted N , and $N=10^{14}$ is defined as the critical density, equivalent to the linear electron density produced by meteor ionization in an area 1 mm in diameter. A trail with $N > 10^{14}$ is called an overdense trail, and a trail with a $N \leq 10^{14}$ is called underdense.

Overdense trails exhibit metallic reflection of radio waves, which cannot pass through them, so that the reflected signal has a high level, a rather long tail, and fluctuation. Some of them even exhibit signal fading. As the wave frequency decreases, fading becomes severe.

Underdense tracks have almost no effect on radio wavefronts, and the waves can pass through them; when they do, the electrons are excited by the varying electromagnetic field and brought into resonance with it, forming pairs of small "dipole" antennas which act as secondary emitters in the trail. The rise time of secondary-emitter signals from the trail is short and the amplitude drops off exponentially.

To summarize, both overdense and underdense trails can propagate radio signals and produce meteor-burst communications. The incident and reflected radio waves are at the same angle to the trail.

Optimal Communications Distances for Meteor-Burst Systems

Usable meteor trails are generally 85 to 115 km above the earth (see Fig. 1). When they occur in the atmosphere, they form elongated paraboloids with an initial head radius of about 1 m and a tail length of about 25 km. By drawing the tangent from the center of the trail to the earth's surface we can calculate the maximum communication range L_{\max} for the system:

$$L_{\max} = (8 \cdot h \cdot R)^{\frac{1}{2}}.$$

Let h (the altitude of the trail) = 100 km, and R (the earth's radius) = 6,370 km, then $L_{\max} = 2,280$ km, very close to the measured value of 1,100

miles. Experiments show that meteor-burst communications systems do not have a lower range limit, i.e. they can cover the distance range from 0 (line of sight) to 2,000 km. Studies of the data throughput capacity of meteor-burst communication systems as a function of distance have shown that there is a distance range in which the throughput is at a maximum (see Fig. 2). It can be seen from the curve that the range between 600 and 1,400 km is the optimum transmission distance. For short distances the throughput decreases somewhat, to a minimum of 60 percent of the optimum value. When

the distance exceeds 2,000 km the throughput drops off sharply and the path is interrupted. For channels requiring distances greater than 2,000 km, the store-and-forward technique is used to form relay systems.

Spatial Distribution of Effective Reflecting Area

In real meteor-burst communication systems it is most important to understand the distribution of the most important and most suitably located meteor paths between stations. Measurements indicate that at a given time there is a most effective reflective area in space. An azimuth diagram can be plotted from measurements, as shown in Fig. 3. It can be seen that the horizon circles having line AB as diameter and the zenith areas vertically above line AB are blind areas in terms of reflective ability; these areas are indicated by zeroes in the figure. The area marked with "100" on the figure is the most effective reflection region; it generally forms an angle of 20-30° with line AB. When a meteor-burst communications channel is established, the antenna should be pointed toward these regions.

In addition, the location of the effective reflecting region changes from day to night; the pattern of its variation changes with the path orientation. Fig. 4 shows the optimum antenna angles during the day and night hours.

Effective Duration of Meteor Trails

The size of the meteor and the speed at which it enters the atmosphere determine how long the trail persists. Heavy, fast meteors have persistent trails. After the trail is formed, it diffuses rapidly; the free electrons can always recombine, and high-altitude winds can distort the trail or break it up into sections. These factors cause the trail to lose its effectiveness. Usually the diffusion coefficient D is used as a measure of the diffusion rate of the trail. It generally is between 1 and 10 m²/sec. The effective duration of the meteor trail is one of the basic characteristics used in determining the throughput of a system. In addition to the diffusion coefficient, it is also related to the direction of the trail, the communication range, the frequency used, and equipment characteristics. The direction of the trail is random, but the duration of "usable" underdense trails can be expressed as follows

$$\tau = \frac{\lambda^2 \cdot \sec^2 \phi}{16\pi^2 \cdot D}$$

where λ is the wavelength, ϕ is half the angle between the incident and reflected rays, and D is the path diffusion coefficient. The effective duration of overdense trails is directly proportional to the linear electron density. A typical duration for a meteor path is between 0.2 and 0.6 seconds. Some publications use the waiting time (twice the interval between effective paths) to indicate the functional capability of the system, and in some cases the throughput capacity is used as an aggregate index of system capabilities. These factors all measure system capabilities in terms of various secondary factors and are not fundamentally different.

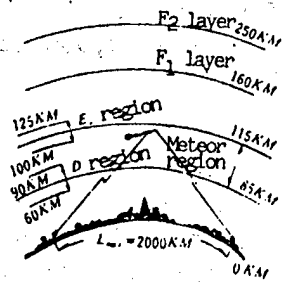


Fig. 1. Meteor-burst communications system

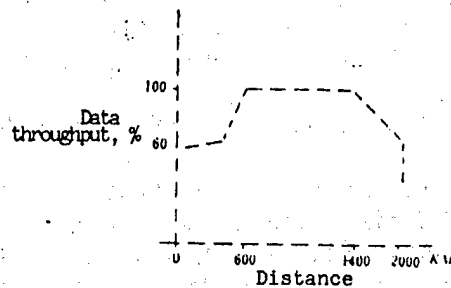


Fig. 2. Throughput as a function of distance

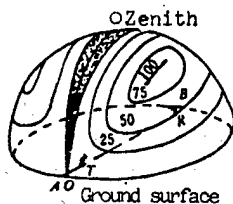
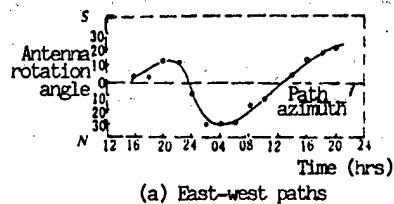
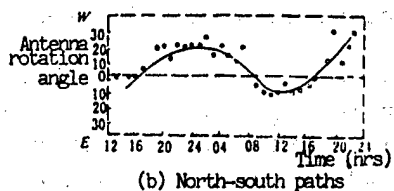


Fig. 3. Spatial distribution of effective reflection area



(a) East-west paths



(b) North-south paths

Fig. 4. Variation of optimum antenna azimuth from day to night

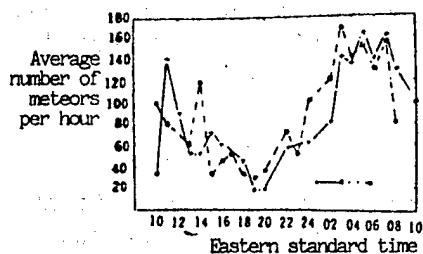


Fig. 5. Change of trail occurrence probability from day to night

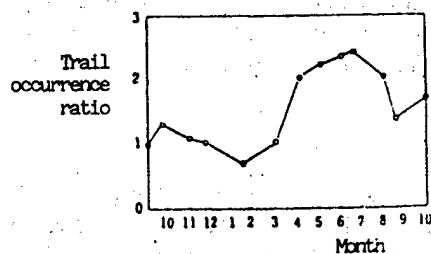


Fig. 6. Seasonal change in trail occurrence probability

Meteor Occurrence Probabilities and Patterns of Occurrence

Prolonged observations indicate that in addition to the approximately 20 major meteor showers, irregularly occurring meteors enter the atmosphere with frequencies inversely proportional to their masses. Observed meteor occurrence frequencies are given in Table 1. It is evident that every day about a billion meteors produce trails in the atmosphere. These are the basis for meteor burst communications. But the trail probability is not uniformly distributed over time. A random distribution is rather evident in the observation statistics for short periods, but for observation statistics for longer periods and plots of the average number of occurrences per unit time show regular differences in meteor occurrence probabilities by season, between day and night, and even with the latitude of the communication path. Mastering and using these patterns is an important stage in mastering meteor-burst communications.

In July the number of meteor trails per unit time is clearly several times greater than that in January (the empirical figure is 4:1). Within a given day, the number at dawn is much greater (about 3:1) than at dusk. At the Equator, the variation in probability between daytime and night is greater than in the vicinity of the poles, while the seasonal variation is greater at the poles than at the equator. Figs. 5 and 6 give statistics for certain paths, showing differences in the number of meteor trails both from day to night and by season.

The changes in the number of trails can be explained as follows. The nonuniform distribution of meteors in their orbits produces the seasonal variation in the number of trails. The variation between day and night is related to the earth's rotation and revolution and the inclination of its axis. Since in the morning one side of the earth is always on the advancing side of the earth's direction of revolution, meteors overtaken by the earth and meteors colliding with it head-on can both be detected in the morning, while on the evening side only meteors with speeds greater than the speed of the earth's revolution can produce detectable trails. Thus the number of trails appearing in the evening is less than that in the morning. But even in the evening in January, when the probability of occurrence is lowest, the detectable number of usable meteor trails is at least 3 per minute.

Characteristic Parameters of Meteor-Burst Communication Systems

Working Frequency: The power reflected by the meteor trails to the receiver is inversely proportional to the cube of the frequency. Thus the power drops off sharply as the frequency is increased; the receiver's capabilities determine the upper limit of the usable frequency range. Conversely, as the frequency decreases there is a marked increase in fading of the reflected signal. Taking both of these factors into account, the frequency range usable for meteor-burst communications is between 30 to 200 MHz. Experience indicates that transmission attenuation increases rapidly above 50 MHz, while below 40 MHz the antenna must be too large. The working

frequency recommended by the Scientific Radio Services (SRS) company (United States) is between 40 and 50 MHz. Of course the specific selection must be made with reference to the surrounding environment in order to prevent interference. The permitted channel bandwidth in the United States is 5 kHz. Permission from the cognizant organization is required for broad-band channels (wider than 5 kHz).

Emitted Power: Increasing the emitted power will decrease waiting time, and relatively weak trails will be usable, thus increasing system throughput. But at high powers, antenna sidelobe interference increases correspondingly, and power supply requirements also rise. The emitted power of the master station equipment supplied by SRS is either 1000 or 500 W; and that of its remote or mobile stations is 300 W (instantaneous pulse power).

Receiver Threshold: For digital transmission paths, the receiver threshold is defined as the minimum receivable signal level for a given error rate; it is a function of the modulation type, the receiver noise figure, the environmental noise level at the reception site, and the permitted error level of the terminal equipment. A low threshold decreases channel waiting time. If a meteor-burst system operating at 45 MHz uses coherent biphase PSK (pulse shift keying) modulation, with a data rate of 4 kb/sec and a bit error rate [BER] of less than 10^{-3} , the receiver threshold level will be -113 dBm.

Antenna Gain: When the antenna gain is increased, the power at the reception site is correspondingly increased, but this does little to increase system throughput, because increasing antenna gain means narrowing the directivity pattern which decreases the effective reflecting area covered in the sky, thus cutting down on the ability to utilize meteor trails. Thus medium-gain antennas are usually used, e.g. 5-element Yagi antennas or 10-dB isotropic antennas.

Data Rate: The effective duration of a meteor trail is only a fraction of a second. Experience shows that to achieve a suitable data transmission capability during this time interval while satisfying necessary formatting requirements, the data rate must be at least 1 kb/sec. A rate of 2-4 kb/sec is usually used; higher rates are subject to bandwidth restrictions. For coherent PSK modulation, the maximum transmission speed must be less than half the permitted channel bandwidth.

Remote Station Density Limitation

Because the beam reflected from the meteor trail is highly concentrated, the path between two sites formed by a specific trail is the only possible one. The projection of the reflected beam on the earth's surface, i.e. the reception area, is usually called its "footprint." Typical footprint dimensions are 34-40 km long and 8 km wide

40-50 km is the density limit for remote stations, and also the limiting factor for communications security. When the remote stations each have a distinctive address code, the system is not constrained by these conditions.

Control Functions of Master and Remote Stations

Master Station Control. There are currently three types of station equipment used in meteor-burst communications systems: master stations SRM-510 and SRM-520, which are full duplex and half duplex respectively, remote data terminal SRM-550, and remote communications terminal SRM-540. Block diagrams of these systems are given in Fig. 7. Each type is computer-controlled. The master stations use minicomputers and the remote stations microcomputers: in all cases the software can be altered to provide special system capabilities.

The master station controls the communications protocols and the processing and output of received information. Received data can be sent automatically to a printer or screen display, transferred to memory for tabulation, or transmitted over a telephone channel via a modem.

The master station is usually equipped with a 500 or 1000 watt transmitter and a receiver, with a duplex or half duplex antenna switch, an antenna, and a minicomputer system.

The master station transmitter includes a crystal controlled oscillator-modulator, a radio-frequency amplifier, a transmitter interface and a power supply. The oscillator drives a PSK modulator, which is followed by a low-level buffer amplifier. The radio frequency signal is amplified by a class C solid state amplifier before being fed to the power amplifier stage. The transmitter interface is used for buffering and signal conditioning between the exciter, preamplifier, computer, and status and control system.

The master station receiver includes three circuit cards: a radio frequency and intermediate frequency mixer, a modulator, and a self-testing module that drives a status card. On the panel are a receiver noise meter and test points, allowing internal control functions to be monitored.

The output of the crystal-controlled radio frequency and intermediate frequency mixer (1 MHz) is fed to a low-index linear phase-locked loop (PLL) frequency shift keying-controlled [as published] demodulator to provide carrier synchronization and bit detection. The data output of the modulator is sent to the computer via the control logic interface.

The self-testing module continuously monitors the operating status of the master station so that the operator can determine whether a fault exists. The self-test data modulates a test amplifier whose input is received by the master station receiver; the received data are stored in the computer for comparison with the original test data, making it possible to test the main station's receiver and computer.

Table 1. Numbers, dimensions and mass of meteors

	Mass m (grams)	Radius t (mm)	Number of meters of mass m or greater swept up by earth per day	Linear electron density (number of electrons per meter of trail length)
Meteors passing through atmosphere to earth's surface	10^4	80	10	
Meteors totally destroyed in atmosphere	10^3	40	10^2	
	10^2	20	10^3	
	10	8.	10^4	10^{18}
	1	4.	10^5	10^{17}
	10^{-1}	2.	10^6	10^{16}
	10^{-2}	0.8	10^7	10^{15}
	10^{-3}	0.4	10^8	10^{14}
	10^{-4}	0.2	10^9	10^{13}
	10^{-5}	80×10^{-3}	10^{10}	10^{12}
Near limit of radar detection	10^{-6}	40×10^{-3}	10^{11}	10^{11}
	10^{-7}	20×10^{-3}	10^{12}	10^{10}
	10^{-8}	8×10^{-3}	?	
Meteor dust (particles unchanged by collision with atmosphere, become suspended in it)	10^{-9}	4×10^{-3}	Total estimated to be 10^{20}	Almost none
	10^{-10}	2×10^{-3}		
	10^{-11}	0.8×10^{-3}		
	10^{-12}	0.4×10^{-3}		

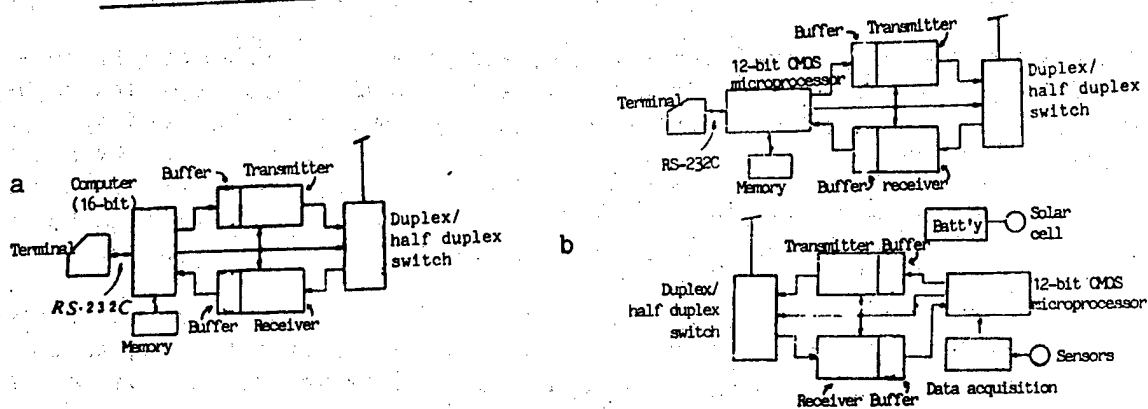


Fig. 7. (a) SRM-510 and 520 master stations; (b) SRM-550 and SRM-540 remote stations

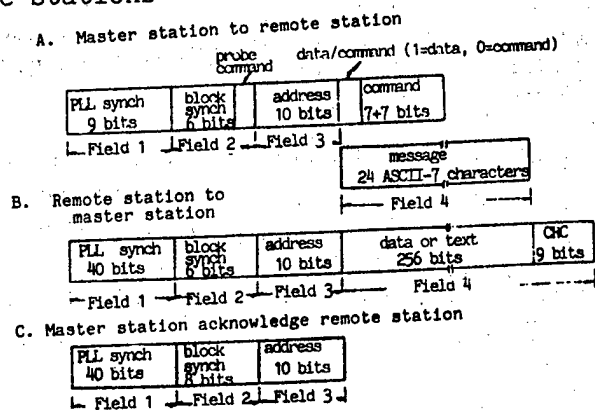


Fig. 8. Communications formats

The SRM-510/520 master stations communications processor includes a NOVA 4/C minicomputer, a general-purpose interface card and an operator terminal. The user system can include any 16-bit general-purpose computer equipped with 64K of internal memory, a real-time clock, an automatic restart circuit for power failures, and a backup battery power supply. Eight-inch floppy disks are usually used for storage.

The computer is connected to the operator console by an RS-232C interface for automatic control of master station operation. An additional RS-232C output port is provided for interfacing with another computer or other peripherals. The control logic interface board housed in the NOVA 4/C chassis provides interfacing between the transmitter, receiver and computer.

The master station antennas are typical Yagi or log-periodic single elements with a gain of 10dB mounted on 35- to 40-foot towers. Duplexers are used on single antennas to block transmitter noise on the receiver frequency and to block the transmitter signal out of the receiver in order to prevent receiver overload.

Remote Station Control: The SRM-500 series remote station terminals include a 300W solid state transmitter, a receiver, and an Intersil 6100 12-bit C-MOS [complementary metal-oxide-silicon] microprocessor, used for data acquisition, processing, message protocol formatting, and transmission control. The data terminal has a switch-selectable address code to allow on-site maintenance and interchangeability of units. A portable terminal can be connected to the transceiver in the field by means of an RS-232C interface capable of passing 300 bits/sec [bits/sec in original].

In half duplex operation the remote station transmitter is usually off; it is turned on only when a probe signal including the address is received, -at which time it responds with a message or data block. Transmission proceeds continuously under control of master station commands until all of the data have been sent or the meteor trail has been lost.

The remote station transceiver is usually provided with a dipole or Yagi antenna. It is generally powered by batteries, which can be recharged from AC mains or solar batteries. When it is used for data acquisition, standard sensor interfacing can be provided for reception and transmission of data. Each remote station has capacity for 16 input sensors, each with a data resolution of 12 bits.

The remote station can also be made into a communications terminal by means of an RS-232C interface, allowing communication with the master station via an alphanumeric keyboard. When setting up the station or during equipment testing and maintenance, companion test equipment can be connected. The remote station's microprocessor temporarily stores the data and controls the execution of message transmission protocols. The master station

acknowledges receipt of the complete message or data blocks with an acknowledge signal.

A Unique Communications Protocol

Because, in contrast to an ordinary channel, a meteor-burst communication channel is intermittent, and because the intervals between connections and the lengths of connections are random, a special protocol is needed for correct communications.

The signal sent from the master station to the remote station is used to establish the channel and to define the type of communication. A typical signal format is shown in Fig. 8A. It is divided into four fields. Field 1 is 9 bits long and is used for phase-locked loop (PLL) synchronization in the receiver. Field 2 is 8 bits long: the first 6 bits are used for group synchronization and the last 2 give the probe command, indicating whether data are to be transmitted or a command received. Field 3 is a 10-bit address field, giving the address of the remote station. Field 4 is a variable-length field: it is 15 bits long for commands, while for data up to 24 7-bit characters can be added. The first bit in field 4 is used to indicate whether the characters that follow are commands or data. The signal from the master station to the remote station can be of three types: (a) a general probe signal to all remote stations, in which case only the first two fields are used; (b) a probe command designating a specific remote station, in which case the address field is added to the first two fields; (c) transmission of a command or data block to the remote stations, in which case four fields are used.

A signal from a remote station to the master station also includes four fields, as shown in Fig. 8B. The difference is that field 1 is 40 bits long in order to assure reliable PLL synchronization of the low-index PSK receiver. Field 2 is only 6 bits long; the probe command code is eliminated. Field 3 is a 10-bit address, which is required in multipoint communications. Field 4 is the message field, 256 bits long, with a 9-bit cyclic redundancy check code (CRC) block at the end.

The master station responds to the remote station with a special 3-field message which confirms that the message sent has been correctly received. This allows use of the message-piecing mode.

When the master station is operating in the half duplex mode, it sends a short probe signal, then waits for a reply. It sends the signal out repeatedly until a channel is established. The communication process uses a 50 percent duty cycle and continues until the message is completely transmitted or the meteor channel is lost.

In the message-piecing mode, if the channel is interrupted before the message has been fully transmitted, the master station sends out a probe signal containing a command in order to find a new meteor trail and establish a

channel; the command in the probe signal instructs the remote station to resume transmission from the point at which communications were interrupted and to complete the message.

In the single-block transfer mode, if a certain block is not fully received, the master station does not send out an acknowledge signal, and this block will be automatically repeated until the master station acknowledges.

In a full duplex system it is possible to know exactly where the message was lost, and accordingly the probe signal can tell the remote station at which block to resume sequential transmission. In addition, a 9-bit cyclic redundancy checking code in the received signal is used to identify blocks that contain errors, after which a probe signal is used to send out an automatic retransmit request.

The above is a simple description of the data transmission protocols used in meteor-burst communications. A typical meteor burst communication system consists of many remote stations arranged in a star network, reporting to a single master station, so that the above three types of protocols can be used to achieve normal data transmission.

Operating Experience with Meteor-Burst Systems

SNOTEL and AMBCS are two large state-run meteor-burst communications systems that are already in operation in the United States. They were established in the middle and early 1970's respectively and implemented in 1976-1977.

The system's data throughput capacity is usually measured by the aggregate data throughput rate, which is affected by the data transmission speed and the mode of operation (broadcast, duplex, half duplex).

Operating experience with the Snetel system indicates that with the master station in the full duplex mode and the remote station data terminal in half duplex mode, a short data block generally can be transmitted in 2 minutes or less. With the master station and all remote stations using full duplex operation, the communications throughput for the system can exceed 100 b/sec. If the half duplex mode is used throughout, the throughput is 70 percent that for full duplex operation.

The broadcast mode cannot compare with the above type of operation: it is suited only for communication of brief messages from the master station to a group of remote stations. In the Snetel system, when short-message-block addressed communications is used, the master station can communicate with 60 remote stations in the course of 5 minutes.

Although use of a full duplex master station increases the cost by about 20 percent, it results in rather high speed for remote station communications. Currently most of the remote stations are in the half duplex mode, allowing rather simple equipment to be used. The remote station transmit cycle is

much lower than that of the master station, because remote stations begin transmission only on receipt of a command from the master station. As a result, the remote station's power supply and heat-sinking requirements are minimized.

The Ambcs system is a transcontinental system used to transmit weather data and agricultural information, for flight data acquisition, and for teletype communications for field surveys. It is a full duplex system that includes several master stations using the store-and-forward technique to increase the communication range to far more than 2000 km.

Meteor-burst systems can also operate in combination with other communications systems; they are ideal for remote data acquisition. The automatic monitoring and reporting network in the BPA power system (United States) has a 400-km channel that uses meteor-burst communications.

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CSO: 5500/4138

20 March 1986

PEOPLE'S REPUBLIC OF CHINA

GUANGXI BEGINS CONSTRUCTION OF BROADCASTING, TELEVISION CENTER

HK230415 Nanning Guangxi Regional Service in Mandarin 1100 GMT 20 Feb 86

[Excerpts] The construction of the main building of the Guangxi Broadcasting and Television Center commenced today. The height of the building is 99.5 m and its area 10,854 square meters. The construction of the 20-storey main building of the Guangxi Broadcasting and Television Center began formally. It is situated on Qiyi Road, Nanning, on the west side of the Regional Broadcasting and Television Station which has been completed and is in use. This is the tallest building now under construction in Nanning City. The total cost of the building is 6.45 million yuan and the period of construction 18 months.

This afternoon it was exceptionally fine, the colored flags were fluttering in the wind and the sound of gongs and drums was deafening at the Guangxi Broadcasting and Television Center main building worksite. The ceremony to mark the commencement of construction began at 1500 hours. Attending the ceremony were Wei Chunshu, chairman of the Regional People's Government; (Zhang Yang), deputy director of the Propaganda Department of the Regional CPC Committee; responsible comrades of the Regional Construction Committee, Regional Broadcasting and Television Department, Regional Comprehensive Design Institute, and Regional Material Bureau; plus some 200 staff members and workers. The ceremony was presided over by (Deng Shengcai), deputy director of the Regional Broadcasting and Television Department. (Chen Ning), acting secretary of the Regional Broadcasting and Television Department Party Group and deputy department director, spoke first.

Wei Chunshu, deputy secretary of the Regional CPC Committee and chairman of the Regional People's Government, spoke [Being Wei recording] Comrades! The construction of the main building of the Guangxi Broadcasting and Television Center begins now. This is a great and joyous event for the broadcasting and television front in our country. On behalf of the Regional CPC Committee and Regional People's Government, I extend warm greetings. [end recording]

[Chen Leiqing), responsible person of the Regional Construction Committee, and a representative of the construction unit--Second Regional Construction

Company--also spoke at the ceremony. Wei Chunshu, chairman of the Regional People's Government, cut the ribbon at the ceremony to mark the commencement of the construction of the main building of the Guangxi Broadcasting and Television Center.

/6662

CSO: 5500/4145

PEOPLE'S REPUBLIC OF CHINA

GUANGDONG TO EXTEND RURAL TELEPHONE FACILITIES

HK180431 Beijing ZHONGGUO XINWEN SHE in Chinese 0123 GMT 14 Feb 86

[Text] Guangzhou, 14 Feb (ZHONGGUO XINWEN SHE)--Guangdong Province plans to install telephones in 75 percent of its rural villages within this year.

At present, about 65 percent of Guangdong's rural villages have telephones. This province ranks first in the whole country in terms of the total capacity, degree of automation, and the number of users of rural telephones.

The Post and Telecommunications Departments said: Guangdong Province this year plans to build 49 new telephone exchange stations in the countryside, and to add 31,800 new minor exchanges. Guangdong will for the first time, use 24-circuit wave carrier and PCM [letters in English, not further expanded] equipment, and will open 1,000 trunk lines in order to increase rural telephone users by 15,000.

The installation of rural telephone equipment and the transformation of the trunk automatic exchange in Shunde County have been listed as key projects in Guangdong's telecommunications construction this year.

The 400-circuit program-controlled central exchange in Shunde County, the 300-circuit exchange in Zhongshan City, and the central exchange in Xinhui County will all be operational soon.

Other telecommunications facilities which will soon be in operation include the 300-circuit microwave line between Shiqi and Xiaolan towns and the 60-circuit microwave lines between Shiqi and Nanpu, Panyu County and Dagang, and Chaoyang County and Xiashan town.

Dongguan City will start the project of installing a 14,000-circuit program controlled exchange, and Zhongshan City will start installing a 1,600-circuit exchange and laying an optical cable.

At present, there are more than 200,000 rural telephones in Guangdong Province, 30,400 of them being automatic. In addition, 1,595 townships have set up their own telephone exchanges.

/6662
CSO: 5500/415

BRIEFS

SHAANXI POSTS, TELECOMMUNICATIONS PROBLEMS--A provincial conference on posts and telecommunications work concluded on 16 January. Vice governors Sun Kehua and Zeng Shenda spoke during the meeting. Zeng Shenda dealt with the question of how to develop posts and telecommunications in Shaanxi, giving three views: 1. Speed up the development of posts and telecommunications. At present it is rather difficult to have a telephone installed in large and medium cities in Shaanxi, such as Xian, Baoji, Xianyang, and Hanzhong, and they also suffer from a serious shortage of trunk lines. There are major problems in being unable to put calls through. This situation urgently needs improvement. 2. We must maintain the principle of having the state, the localities, the collectives, and individuals work together to tackle posts and telecommunications work. 3. Attention must be paid to building spiritual civilization, improving telecommunications quality, and providing better service. [Excerpts] [Xian Shaanxi Provincial Service in Mandarin 2300 GMT 16 Jan 86 HK] /6662

GUANGDONG BROADCASTING, TELEVISION WORK--During the Sixth 5-Year Plan period, broadcasting and television work in Guangdong Province developed relatively greatly. The number of broadcast transmissions increased from four in the Fifth 5-Year Plan period to six in the Sixth 5-Year Plan period. The total number of broadcasting hours a day increased from 50 to 84. The province built a stereo station, the first one in China. The number of television transmissions increased from one during the Fifth 5-Year Plan period to three during the Sixth 5-Year Plan period. The total number of television hours increased from 5 to some 21. The rate of broadcast coverage increased from 53 percent of the provincial population during the Fifth 5-Year Plan period to 70 percent during the Sixth 5-Year Plan period. The rate of television coverage increased still more quickly. [Summary] [Guangzhou Guangdong Provincial Service in Mandarin 1000 GMT 23 Jan 86 HK] /6662

XIGANG TV VIA CHINESE SATELLITE--At 1830 on 20 February, the Lhasa ground station received television programs relayed through the telecommunications satellite which was researched and manufactured by China and launched by China on 1 February. The picture on the television screen was clear and the accompanying sound was distinct. According to the direct observation of the relevant technological personnel, the relaying effectiveness of the telecommunications satellite China researched, manufactured, and launched is comparable to that of the international telecommunications satellites now in use. At 1900, Dangzin, deputy secretary of the regional CPC committee, and responsible

comrades of the regional radio and television bureau watched at the ground station, the news hookup program of the central television station which was relayed through China's telecommunications satellite. [Excerpt] [Lhasa Xizang Regional Service in Mandarin 1130 GMT 21 Feb 86 HK] /6662

YUNNAN SATELLITE GROUND STATION--Jointly developed by the Provincial Research Center for Electronics Industry and No 784 Plant under the Ministry of Electronics Industry, the 6-meter antenna (Fan Zhong) Satellite Ground Station project was put into operation in Kunming in early February. The color television picture received by the station was sharp and clear, and the quality of sound accompaniment was also good. The leadership, specialists and technicians concerned, who visited the station, spoke highly of the results. At present, the provincial research center and factories concerned in the province are making preparations for producing large scale facilities for supporting the station. It is expected that this year, the factories will produce 100 sets of equipment for satellite ground stations. This creates good conditions for building satellite ground stations in prefectures, autonomous prefectures and counties; and for the reception of good, direct satellite television programs by the people. [Text] [Kunming Yunnan Provincial Service in Mandarin 1100 GMT 23 Feb 86 HK] /6662

HAINAN SATELLITE STATIONS--Guangzhou, 4 Feb (XINHUA)--Three satellite relay stations have gone into operation on Hainan island, enabling most TV viewers there to receive direct broadcasts of China Central TV programs. One station went into operation in the southern island's capital of Haikou today. The other two began operating in Qionghai County and at a state farm late last month. Previously, Central TV programs had to be recorded in this Guangdong provincial capital, and then sent to the island on video tapes the next day. The relay stations have been built with funds raised by local authorities and businesses, a Hainan official said. Homes on 95 percent of the island can now pick up TV broadcasts. [Text] [Beijing XINHUA in English 1500 GMT 4 Feb 86 OW] /6662

CSO: 5500/4144

VIETNAM

BRIEFS

BEN TRE WIRED RADIO--The wired radio network in Ben Tre Province has now expanded to villages, city wards, production collectives, cooperatives, factories, and schools with 237 small and large radio sets and 10,600 loudspeakers. The provincial authorities are now focusing on improving the quality of this wired radio network to permit the people [to] hear the voices of the party and state quickly. [Summary] [Hanoi Domestic Service in Vietnamese 0500 GMT 12 Feb 86 BK] /9274

HA TUYEN RADIO NETWORK--Since 1980, Ha Tuyen Province has established 128 wired radio stations in the border areas. This is aimed at improving the quality of the task of propagandizing and educating party and state policies and lines among the local people and armed forces. [Summary] [Hanoi Domestic Service in Vietnamese 0500 GMT 19 Feb 86 BK] /9274

CSO: 5500/4325

BRAZIL

BILATERAL INFORMATICS PROJECTS WITH ARGENTINA

PY262239 Sao Paulo O ESTADO DE SAO PAULO in Portuguese 25 Feb 86 p 39

[Text] Brazil and Argentina will develop nine pioneer projects in the informatics field, within the framework of the bilateral cooperation program which has been signed by the two countries. This was the main conclusion of the first EBAI [Brazilian-Argentine Informatics School] workshop which is being held at the Campinas State University, UNICAMP, and is being attended by over 500 researchers, graduates, and post-graduate students. Carlos Lucena, the Brazilian coordinator of the bilateral cooperation program, yesterday noted that all the established projects will be carried out before June and that "they can be compared with those currently being developed in the United States, Europe, and Japan--they are fifth generation programs." He added that "Brazilian researchers were invited to participate in the 'Spirit' project in Europe, but they were later excluded from the project because they are not members of the European Informatics Community."

According to Armando Martim Haereder, the Argentine coordinator of the program, the nine projects which by the second half of the year will be submitted for evaluation to the SEI [the Informatics Secretariat] and to the Argentine Science and Technology Secretariat for allocation of funds "will be extremely important for the development of this area in the Third World. This is an issue of great concern to countries of the old world which form tightly knit groups that impede our entrance to the sector."

The most important of the nine projects to be carried out is the development of a "RISK" [in English] type computer, which is the most recent American generation of computers that gives better performance, also the development of "hardware and software [in English]. Another project that was defined at the EBAI workshop is one regarding the establishment of a signal processor for use in banking and commercial areas. The objective of this project is to improve the verification system of the automatic code check [teleassinaturas] and automatic voice recognition. Researchers will also study the "software" [in English] development process. Lucena noted that "the idea consists of formulating and experimenting with new ideas aimed at generating knowledge that will make more viable the development of effective systems and to produce new software."

But the most ambitious projects of the bilateral cooperation program concerns the creation of specialized safety systems to be applied in nuclear areas. Carlos Lucena explained that "it deals with the automation of safety programs in nuclear reactors and other nuclear installations, through the implementation of specialized software systems." In addition to the nine projects to be submitted to the SEI and the Argentine Informatics Secretariat for approval and to authorize funds, the EBAI workshop also approved nine basic research lines that will be discussed at the Brazilian-Argentine Informatics school to be held in Buenos Aires in February 1987.

The most important of these research lines pertains to the microelectronic field, and it provides for the study of projects on integrated circuits, CIS manufacturing processing, reliability tests, and fault analyses. Another research line establishes the creation of an analysis and synthesis group of Portuguese and Spanish with the objective of establishing a single software language common to both countries. At the EBAI II to be held in Argentina a laboratory for the production of the first chip and the first software to be manufactured by the two nations will be introduced. The first seminar will be closed on 1 March in the presence of Science and Technology Minister Renato Archer and Argentine Science and Technology Secretary Manuel Sadosky.

/9604

CSO: 5500/2028

BRAZIL

SARNEY REFUTES ABREU SODRE ON COMPUTER POLICY

PY142049 Paris AFP in Spanish 2217 GMT 13 Feb 86

[Text] Brasilia, 13 Feb (AFP) -- Less than 24 hours before the swearing-in ceremony, President Jose Sarney today refuted a statement made by Roberto Costa de Abreu Sodre, the future foreign minister, who had referred to the law closing the Brazilian computer market. Abreu Sodre said on 12 February that the law might be changed to give a chance to the large multinational companies, which have no access to the Brazilian computer market. Sodre said that Brazil can preserve its independence without harming the countries that want to promote their exports. The FRG, the United States, and Japan are the three countries which have most strongly pressured Brazil to open its computer market.

The presidency today issued a communique which, without mentioning Sodre, warns that Sarney will not, under any circumstances, change the computer market closure law. The communique adds that the computer market policy, now implemented by the Sarney administration, was voted on and approved by Congress, where then Senator Jose Sarney supported it. This policy takes national interests into account and will be neither changed nor made more flexible, the communique concludes. Sodre, who is scheduled to replace foreign minister Olavo Setubal on 14 February, has been strongly criticized by JORNAL DO BRASIL, an influential newspaper.

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CSO: 5400/2038

BRAZIL

BRIEFS

NEW RADIO STATION--Communications Minister Antonio Carlos Magalhaes on 27 February will inaugurate the Educational Radio that will operate in the Federal University of Alagoas in Ceara. This radio station will use material provided by the BRAZILIAN NEWS ENTERPRISE for its news programs. [Text] [Brasilia Domestic Service in Portuguese 2100 GMT 26 Feb 86] /9604

NEW TV REPEATER STATION--The Communications Ministry and the Army will install five repeater television stations in the Amazonas and Mato Grosso areas, as part of the Army TV Network. These new repeater stations will be linked to stations in the southern region of the country through the Brasilsat satellite. [Summary] [Rio de Janeiro O GLOBO in Portuguese 21 Feb 86 p 5] /9604

CSO: 5500/2028

COLOMBIA

BRIEFS

COLOMBIAN-FRENCH GOVERNMENT AGREEMENT--The governments of Colombia and France today signed an agreement to broaden the coverage of Television Network Three. The agreement involves an investment of 490 million francs that will help develop the education-at-a-distance program being implemented by the current administration. Through the agreement, France will extend 480 million francs to Colombia at favorable terms and donate 10 million francs. It also committed itself to donating an equivalent of 13 million francs in spare parts for equipment that will be installed. The French Government will also send experts to advise Colombian technicians on operation and maintenance of that equipment. [Summary] [Bogota EL SIGLO in Spanish 19 Feb 86 p 3] /9604

CSO: 5500/2029

PERU

NATION INTEGRATED INTO METEOROLOGICAL SYSTEM

Lima EL COMERCIO in Spanish 31 Oct 85 p A-10

[Text] Beginning today Peru will be integrated into the international system for transmitting hydrological and meteorological data via satellite, which will permit reception of data on atmospheric phenomena in the most remote parts of the country, as well as that originating in foreign countries, which can be important to our national development.

To this end the first two concentrated data platforms for utilizing the geostationary GOES East satellite will be opened officially at 10:30 a.m. at the Geophysical Institute Observatory of the Geophysical Institute of Peru in Ancon.

The announcement was made by the National Meteorological and Hydrological Service, the agency in charge of this system through an agreement with the U.S. National Oceanic and Atmospheric Administration.

It is emphasized that the importance of the concentrated data platforms and the functioning of the satellite transmission system is based on the fact that, thanks to the system, it will be possible to obtain numerical data concerning atmospheric phenomena in the most remote areas of the country, where physical conditions make it practically impossible to obtain information by other means.

In addition to the platforms being inaugurated, others of the same type have been installed as part of a pilot network in the Amazon jungle. The information obtained through the system will be very valuable in forecasting floods and weather, as an aid to navigation and for agricultural forecasts, among other things.

At present the international system of remote satellite reception consists of more than 15,000 stations scattered throughout the American continent.

8735/9274
CSO: 5500/2057

INDIA

AMBITIOUS TELECOMMUNICATIONS EXPANSION PLANNED

Calcutta SUNDAY in English 2-8 Feb 86 pp 34-35

[Article by Kalyan Kar]

[Text]

Telecommunication facility has long been one of the key parameters in evaluating the degree of economic development of countries. In the industrialised nations, telecommunications plays a significant role in the economic and commercial activities and acts as a catalyst for growth. In contrast, telecommunication facilities in the Third World are not sufficiently developed to sustain even national services. Of 600 million telephones in the world, about 450 million are accounted for by just nine countries; 75 per cent of the world's population lives in countries with ten telephones or less for every 100 persons, and over half the world's population belongs to nations with less than one telephone per 100 persons.

In India, the level of telephone service is among the most dismal: four telephones per 1,000 persons against the global average of 19.1 per 100 persons and a stupendous 83 telephones per 100 persons in the USA and 49.6 per 100 in the UK. Telecommunications experts have already cautioned that India is fast approaching a stage when the communication network will totally collapse because of sheer overload. In fact, it has been estimated that congestion of the network can be kept within manageable limits if the telephone density is raised to 12 per cent of the urban population and two per cent of the rural population. In other words, India would need 28 million telephones corresponding to 24 million exchange lines to ensure that the nation's communication system remains within manageable limits of

operation. Considering that there are only four million telephones today, the future does appear to be bleak.

But there is a silver lining in this grim scenario: the telecommunications industry, which, for all practical purposes, is the Indian Telephone Industries (ITI), is under the stewardship of K. P. P. Nambiar, chairman-cum-managing director, the man who made Keltron, a Kerala government undertaking, into one of the most well-known names in the sphere of electronics. Mr Nambiar, who took charge of ITI only on 1 March, 1985, has expressed confidence that despite the formidable challenges, the "communications industry, under the leadership of ITI, will emerge in the 21st century spearheading the communication revolution by providing the necessary equipment and systems..."

As part of the communication revolution, ITI plans to invest Rs 610 crores during the Seventh Plan though it has been sanctioned an outlay of Rs 335 crores only by the government. By 1990, ITI would have manufactured 44.03 lakh exchange lines, 56 lakh telephone instruments and Rs 1,161 crores worth of transmission equipment.

The growth of the Indian telecommunications industry has been closely linked with the growth of ITI. It was the first public sector enterprise to be set up, in 1948 in Bangalore, in collaboration with Automatic Telephone & Electric Co., UK, to make strowger switching equipment and telephone instruments for the P&T department. Today it has grown to be one of the largest public sector units

with 12 factories in six locations with 30,000 employees. Telecommunications has undergone rapid changes in technology, and ITI's strength lies in its ability to absorb and adapt to these changes along with physical growth. Though the bulk of its production capacity is confined to strowger and crossbar switching systems at present, it has already initiated steps to switch over to digital electronic switching technology as recommended by the Sarin Committee.

The trend in communications technology is towards total digitalisation, optical communication, large-scale integrated circuits, micro-processor based systems and computerisation. And work in this direction is being vigorously pursued in the R&D divisions of ITI at the Bangalore and Naini units. As Mr Nambiar has pointed out: "ITI is accelerating the process of implementation of the digital exchange switching factory at Mankapur in UP, under technical collaboration with CIT-Alcatel of France and exploring possibilities of technology transfer for digital microwave, frequency division multiplexing equipment, single channel per carrier systems..." The company is also collaborating with FACE Standard of Italy for the manufacture of 500,000 rotary and 500,000 electronic push-button type telephones at its Bangalore and Naini units. To take care of present traffic conditions in the country, ITI is collaborating with

Bell Telephones to make 200,000 lines per year of electro-mechanical switching systems at its Rae Bareilly factory based on the Indian crossbar design.

ITI's R&D has achieved successful results with prototype designs in certain high-technology areas like low-cost earth station terminals to establish a network using satellite links between various centres, a 50/200 electronic exchange which has been tried at Amundi in Tamil Nadu, a 30-channel pulse-code-modulation system installed at Bombay, and a 46-channel time division multiplex voice frequency telegraph system under trial between Bombay and Madras. ITI is also supplying the supervisory remote control equipment and centralised micro-processor-based traffic control equipment for Calcutta's Metro Railway. But its most significant achievement last year was the development of the integrated local and trunk automatic exchange equipment using the latest micro-processor technology which could form the basis of the electronic rural exchanges that are being planned by the government.

While presenting the annual accounts for 1984-85, Mr Nambiar had mentioned that ITI intended to provide the necessary equipment and systems "for the overall digitalisation of the national network and helping to establish the Integrated

Service Digital Network (ISDN), enabling the transmission and reception of data, voice and facsimile through the simple telephone line to the subscriber". ITI plans to introduce new products like VHF radio telephone systems, 3-channel and 8-channel open wire systems, and multi-access rural radio systems (MARR) in the area of transmission.

ITI is also planning to diversify into the field of oil and gas pipeline communication. It has already signed a memorandum of understanding with Japan Radio Co. for manufacturing digital microwave systems with 120 channels. With an investment of Rs 3 crores, it expects an annual turnover of Rs 15 crores from the pipeline sector.

To partly finance its massive investment plans, ITI is entering the capital market with a public issue of 10,00,000 14 per cent secured redeemable non-convertible bonds of Rs 1,000 each for cash at par to raise Rs 100 crores. In 1984-85, the company's production was valued at Rs 236 crores, up ten per cent over the previous year. The pre-tax profit was Rs 26.16 crores against Rs 20.76 crores in the earlier year, while profit after tax recorded an increase of 24 per cent at Rs 15.5 crores against Rs 12.5 crores. After Keltron, ITI may well be Mr Nambiar's next success story.

/9317

CSO: 5500/4722

IRAN

BRIEFS

TELEVISION STATION INAUGURATED--On the occasion of the anniversary of the Islamic revolution in Iran the television station in Gavbandi District began operation. The district, which is a subdistrict of Bandar-Lengeh, can now cover some 20 villages using this 50-watt VHF transmitter, which uses an earth station to receive satellite broadcasts, and rebroadcasts the programs of the Vision of the Islamic Republic of Iran on Channel 12. /Summary/ /Bandar 'Abbas Domestic Service in Persian 1330 GMT 12 Feb 86 GF/ 12228

NEW TRANSMITTER FOR JASK--According to a report from the Central News Unit, in order to provide television coverage to rural areas, a 50-watt transmitter of the Jask District in Hormozgan went into operation with the help of a ground satellite station. With the installation of this transmitter and its operation, the residents of Jask port and the villages of Old Jask will be able to view the Channel One network of the Vision of the Islamic Republic of Iran with better reception on Channel Three. /Text/ /Bandar 'Abbas Domestic Service in Persian 1330 GMT 20 Feb 86 GF/ 12228

FIRST POWERFUL UHF TRANSMITTER BECOMES OPERATIONAL--Bandar 'Abbas--KEYHAN Correspondent--The Jenah television and radio FM transmitter, including the first powerful UHF television transmitter in Iran, was officially inaugurated yesterday morning with participation by Mohammad Hashemi, Acting Director of the Voice of the Islamic Republic of Iran Organization, several officials and managers from Voice of Iran centers, and local officials from the province of Hormozgan. Our correspondent reports that this station, which has two 10- and 20-kilowatt UHF and VHF television transmitters and two 10-kilowatt FM radio transmitters, will be able to broadcast programs from Network One of the Islamic Republic of Iran on channels four and 36, as well as the Voice of the Islamic Republic of Iran's Persian and Arabic programs at the frequencies of 100.8 and 104.4 megahertz. The broadcasts will reach two cities and 174 villages on a coastal line from Bandar Maqam to Bandar Mo'alem, and from the vicinity of Bandar Lengeh and the Islands of Lavan, Kish, Farur, Beyn-e Farur, Siri, the Greater and Lesser Tombs, and Abu Musa, and, if atmospheric conditions are favorable, to points outside the country. This transmitter, which was built at an elevation of 1,450 meters on Mount Jenah, cost more than 230 million rials. All installation and application of equipment and necessary facilities were done by engineers and specialists in the Voice of the Islamic Republic of Iran Organization. It is necessary to explain that the Jenah radio and television transmitter, by making permanent use of satellite television systems in the country, can broadcast with good quality the programs of the Voice of the Islamic Republic of Iran for the areas within its range. The installation of satellite receiving equipment at this station has now been completed, and it will be put to use after testing. [Text] [Tehran KEYHAN in Persian 5 Jan 86 p 1] 9310

CSO: 5500/4724

IRAQ

BRIEFS

SOUTHERN FIBER OPTICS CABLE--Tenders are due in on 4 December for Iraq's first large-scale fibre optics communications scheme. The Lower Euphrates fibre optics system will involve laying a 1,00-kilometre cable, providing 45,000 channels, between Baghdad and Basra. Construction is expected to take two to three years, with costs estimated at between \$85 million-125 million; contractors have been asked to accept payment deferred for not less than two years. Companies expected to bid include Japan's NEC, Philips of the Netherlands, Sweden's Ericsson, Italy's Telettra and France's Alcatel Thomson International. Client is the Transport & Communications Ministry's Coaxial Cable Organisation. The organisation is understood to be in charge of long-distance communications projects, and is reported to be managed by the military. Smaller fibre optics schemes have already been carried out. In 1982, a Japanese group of Mitsubishi Corporation, NEC and Furukawa Electric Company won a \$1.6 million order to supply and install nine kilometres of cable in Baghdad (MEED 17:12:82). The order, the third placed with the Japanese, followed similar contracts placed with French and Swedish concerns, and was said to be the forerunner of a series of larger projects. Future fibre optics schemes are expected to include the Upper Euphrates systems which will link Baghdad and, probably, Mosul. [Text] [London MIDDLE EASTERN ECONOMIC DIGEST in English 30 Nov 85 p 20] /13104

CSO: 5500/4516

CHAD

GOVERNMENT APPROVES PROTOCOL ON INTELSAT

AB151116 Ndjamena Domestic Service in French 0530 GMT 15 Feb 86

[Excerpts] The head of state yesterday morning presided over an extraordinary cabinet meeting. Here is the report made by Homamat Soumaila, minister delegate to the presidency in charge of information:

[Begin Soumaila recording] The ordinary cabinet meeting of Thursday, 13 February 1986, was held today under the chairmanship of Comrade El Hadj Hisssein Habre, president of the republic, head of state and chairman of the Council of Ministers. The meeting examined two items on the agenda. But before examination of the items on the agenda, the president of the republic informed the cabinet about the Chadian situation in general and the new war which Libya has again imposed on us.

Coming back to the items on the agenda, the minister of posts and telecommunications submitted to the Council for approval a draft ordinance on the ratification of the protocol related to the privileges, exemption and immunities of Intelsat, the International Satellite Telecommunications Company. The minister pointed out in his accompanying letter that Intelsat was established in Washington on 20 August 1971 and that Chad became a member on 9 June 1977. The organization which now has 110 members, ensures the management and maintenance of satellites, the minister concluded. After some formal questions, the Council gave its approval. [End recording]

/6662

CSO: 5500/51

EUROPEAN AFFAIRS

ITALIANS EXPRESS INTEREST IN SPANISH TV

Madrid CAMBIO 16 in Spanish 6 Jan 86 pp 16-17

[Article by Jose Oneto]

[Text] Late in the afternoon of 12 December, a private Mystere jet landed at the Madrid-Barajas airport.

On board was a 49-year-old Italian, Milanese by birth, a doctor of law and an architect, known in his country as "Sua Emittenza" [His Emittance]. He was nearing the end of an exhausting workday that had begun in Milan, continued in Paris with a luncheon spent in negotiations, and which was going to end that night in Madrid at the Moncloa Palace, with a private dinner with the prime minister, Felipe Gonzalez.

The Milanese citizen on board the Mystere, Silvio Berlusconi, the owner of real estate and publicity companies, the boss of three television channels in Italy (Italia 1, Rete 4, and Channel 5), and a partner with Jerome Seydoux in the first private television channel in France, is known in his country as the great broadcaster ("Sua Emittenza"). He had never before met Spain's prime minister, Felipe Gonzalez. They didn't know each other, but no intermediaries were needed.

Berlusconi, a personal friend of the Italian prime minister, Bettino Craxi, is also acquainted with France's President Francois Mitterrand. He carries his success with him like a visiting card, because everything he touches seems to turn into gold. His great aspiration for the future is to take part in a European television system that could broadcast to 250 million viewers.

On 12 December, Silvio Berlusconi dined alone with Spain's prime minister in the Moncloa Palace, and explained to Felipe Gonzalez the most efficient and most profitable model for a private television system, based on Italy's experience in recent years.

His letter of introduction in Spain (aside from his already solid ties with a leading businessman in the press) consists of his ownership of Roma Studios, purchased last November for 580 million pesetas, and of an ambitious project to produce programs. Starting in January, 2 billion pesetas are to be invested in this project.

The confidential nature of the Berlusconi-Gonzalez interview prevents us from knowing if in fact this Milanese Midas did manage to convince Felipe Gonzalez of the efficiency of a more entertaining, more self-assured, and more profitable nonpublic television system--and above all, one that has closer ties with other European projects. But what does appear certain is that the dinner did serve to dispel some doubts which Spain's prime minister has had about the need to regulate the number of channels, a promise that has been pending for months now.

Gonzalez himself had announced a policy of freedom for television channels over a year ago, at the time when it was announced that the organic law would be ready before the end of 1985.

The first LOC [Communications Regulation Law] bill, prepared last May by the staff of former minister of transportation Enrique Baron, was not supported by his successor, Abel Caballero.

The Baron bill led to a major split in the council of ministers, primarily because of the opposition expressed by the former superminister of the economy, Miguel Boyer. The bill consisted of a four-page preamble justifying the bill's text, five major headings, 48 articles, eight additional provisions, seven transitional provisions, and one repeal clause.

This bill attempted to regulate all types of communications, from the postal service up to and including what the law called "radio and television broadcasting." The latter is considered a basic public communications service, whose ownership belongs to the state.

After the cabinet shakeup in July and the departure of the ministers of transportation and the economy, Enrique Baron and Miguel Boyer, who had clashed on matters involving jurisdiction and subordination, the private television issue was left on the shelf until last November, when deputy prime minister Alfonso Guerra announced in Seville at the closing of the Fourth International Colloquium on the European Human Rights Agreement that the government would shortly send to parliament a bill regulating private television broadcasting, as a way to further the freedom of expression guaranteed by Spain's constitution.

At the present time, according to reliable sources directly involved with the drafting of the new law, responsibility for this matter has passed directly to the hands of the prime minister, Felipe Gonzalez, and the cabinet spokesman, Javier Solana.

After his talk with Berlusconi, it seems that Gonzalez has decided to give a new push to the bill, which is now on his desk awaiting an appropriate time to be sent to parliament, after being approved by the council of ministers.

Reliable sources indicate that the Moncloa Palace has apparently decided to allow three channels to operate. One would follow a more or less conservative line. It would include the newspaper ABC, the Catholic Publishing House, the COPE stations, and a group of regional magazines, including LA VANGUARDIA from Barcelona and EL CORREO ESPANOL-EL PUEBLO VASCO from Bilbao. Its main financial backer would apparently be Ignacio Bayon, a member of the CEOE [Spanish Confederation of Businessmen's Organizations], and one of the seven largest national banks.

This first group would also include the group of stations using Antenna-3 and Radio-80.

The second channel would reportedly be controlled by the Zeta group. Its president, Antonio Asensio, has apparently already made some contacts both with Silvio Berlusconi and with a Venezuelan group, Gustavo Cisneros, which operates a number of television stations in Venezuela.

The third channel is the one that has been in a more difficult position because, according to some nongovernmental sources, there were not sufficient frequencies available. It would be operated by PRISA, the company which publishes the newspaper EL PAIS, and the SER [Spanish Broadcasting Company] (SER channel).

This third channel might also be used by some of the applicants who at the present time have been left out of the government's original concessions.

According to a number of sources, businessmen close to the Socialist Party might be involved in some of the channels. They could establish some sort of contacts with three of the banks (Bank of Bilbao, the March Bank, and the Bank of Santander) which, in principle, seem to be prepared to finance this ambitious private television project for Spain.

In any event, nothing has yet been definitely decided. Nor does Gonzalez seem to have finally resolved an issue that is of great concern to him, an issue which, after the NATO referendum, is going to occupy his full attention.

Not even after his meeting with Berlusconi was the prime minister able to erase many of his doubts. The regulatory decree is ready and waiting on his desk, but many things may still happen before the final resolution.

7679

CSO: 5500/2579

DENMARK

BILL WOULD SEPARATE GOVERNMENT PHONE NET FROM P & T MONOPOLY

Copenhagen BERLINGSKE TIDENDE in Danish 31 Jan 86 Sect III p 4

[Text] Minister for Public Works, Communication & Transportation Arne Melchior yesterday introduced the bill that would restructure the telecommunications services. The minister wants the government phone networks to be separated from the P & T monopoly.

Minister for Public Works, Communication & Transportation Arne Melchior (Center Democrats) wants the government phone net to be separated from the P & T monopoly as part of a new distribution of tasks between the government and the telephone companies operating under concessions.

This proposal was contained in the bill introduced by Arne Melchior in the Folketing last Thursday.

The background to the change is a decision made by the government in April of 1985, according to which the government will transfer large sections of the telecommunications network to the telephone companies, which will also take over all contact with customers for most telecommunications services.

The functions to be performed by the government will be gathered within the Government Telecommunications Service, which will safeguard nationwide tasks, including the entire radio services. In North Schleswig, which is outside the area of the Jutland Telephone Company, a 'Tele North Schleswig' will be established, which, like the Government Telecommunications Service, will be organized as separate government enterprises.

It is proposed that the government telephone network for the area of Møn become included under the Copenhagen Telephone Company.

Arne Melchior says that it is a prerequisite of the reorganization of the tasks that it will not cost the government additional money.

7262
CSO: 5500/2580

DENMARK

BRIEFS

MOBILE PHONE SYSTEM ADVANCES--The Postal and Telecommunications Services have had such a great success with their new mobile telephones that the system will now be expanded. In the course of the next 3 years, 40 new 'base stations' will be built throughout the country--each consisting of a 99 meter high steel mast and a fairly small building for transmitters and receivers. [Text]
[Copenhagen BERLINGSKE TIDENDE in Danish 19 Oct 85 p 2] 7262

CSO: 5500/2580

FRANCE

MINITEL USED IN POLITICAL CAMPAIGNS

Paris LE NOUVEL ECONOMISTE in French 24 Jan 86 p 42

[Article: "Data Communications: The Minitel Is Entering the Campaign"]

[Text] Billboards, radio stations, TV stations no longer meet the needs of politicians in gleaning the votes that will make a difference on 16 March. They are investing in a new support, the Minitel, which has the dual advantage of opening the doors of over 1 million French households and of making potential voters pay for political propaganda.

"We are beginning to balance our operation," Mr Bernard Tani, cofounder of Direct Democracy, acknowledged; this is the leading political service: 60 hours of daily connect time, 15,000 calls per month. Through this service, Mr Pierre Mehaignerie, the CDS chairman, answered over 300 questions live. The minister of PTT, Mr Louis Mexandeau, followed him. A dream cohabitation that is not found on the other services. PS-Info, MMD-UDF FN-National Hebdo are marching under their own colors. Printemps 86 and GAO are going respectively to the right and to the left. But for the time being all the "partisan" services are spending money. "Each presentation of an issue on the datacom network costs us FF 10,000," Mrs Jeanne Bordeaux, in charge of communications at P-86--200 calls per week--explained.

Computer-Aided Left (GAO) decided to give an interest to the firms that developed its application: the CTL server gets 50 percent of the amounts paid back by the PTT; the Gicquel-Katz design company and the ACM data-processing service and engineering company get each 25 percent. But with 40 hours of daily connect time, the business is not yet profitable. For the UDF and the Micromedia company, which set up the system, the bill amounts to FF 250,000. "But that does not include the cost of the printers we lent out," Mr Emmanuel Gazeau, who monitors the MMD-UDF service, pointed out: 130 UDF personalities are equipped with autotex-printers receiving and editing around the clock.

With PS-Info, the Post Office Administration has lost a client to the Telecommunications Administration. The service replaces a daily newsletter that was not delivered on time. "That cost us the price of a (French) microcomputer with eight modems to transmit the information and three software packages." As far as service quality is concerned, subscribers gained on the exchange. As for price, that is something else: FF 0.77 for 20 minutes [as

published] when calling from Paris, and 1 unit every 12 seconds when calling from the province. It is costly and not very profitable: the PTT have nothing left to redistribute. The smarter ones chose the "datacom newsstand": 77 centimes for each 45 seconds, with two thirds paid back to the service called. But to use it you need a registration number from the joint press commission. The National Front is using that of its weekly; GAO arranged to be sponsored by LA LETTRE DE LA MEMOIRE COURTE. The UDF is more discreet "but legitimate," we were assured. Anyhow, what is important for datacom politicians is to hold out until 16 March. After that, the votes will be in the ballot boxes.

9294

CSO: 5500/2587

FRANCE

DOMESTIC SATELLITES CALLED 'TOO EXPENSIVE' TO BE COMPETITIVE

Paris LE NOUVEL ECONOMISTE in French 10 Jan 86 p 50

[Article by Jean-Francois Jacquier]

[Text] We know very well how to manufacture satellites, and we know very well how to place them in orbit. But they are not competitive.

"A new phase. A major program which must decisively express the breakthrough of French space technology." Several days before the Ariane launching of Spot 1, a French earth observation satellite, officials at the National Space Studies Center (CNES) could hardly conceal their excitement. Clearly intended for military applications, Spot 1 will also be charged with civilian, scientific, and economic tasks: oil research, evaluation of agricultural production, hydrology, cartography, and so on. The first in a family of four, Spot 1 costs 2 billion francs and will allow France to enter the space remote-sensing market; this is a promising market, assessed at 350 million francs per year, and one in which the Americans and the Soviet Union had a de facto monopoly until now. Spot 1 will thus be France's eye in space, the world's third eye, independent of the other two large countries.

Spot Image, the company responsible for selling the images collected by the satellite, has already signed sales agreements with 37 different countries; a subsidiary was also created in Washington to capture part of the North American market, the largest consumer of television images. "All in all, in a few years the market could reach 40,000 to 80,000 images per year," the officials estimate. At \$1000 each on magnetic tape, or \$250 on photographic film; together with the receiving stations (about 30) which should be supplied by SEPS (Europe Propulsion Company), Spot could become a profitable business. With Telecom 1, the telecommunication satellite launched in 1984, and TDF 1, the direct television satellite which should be placed in orbit in November 1986, France will have by the end of the year a panoply of operational satellites covering the most promising sectors.

According to a recent OECD (Organization for Economic Cooperation and Development) report, CNES, which oversees all the French space programs, presently stands as the second largest civilian space agency in the world.

While it is true that it trails far behind the American NASA, whose budgets are ten times larger, it is still ahead of the Japanese NASDA. In terms of expense per inhabitant, France's effort in space is also by far the largest in Europe.

With four large builders (Aerospatiale, Matra, Thomson, and SEP) and about 40 equipment manufacturers, the French space industry has had revenues of about \$400 million in 1983, equal to Japan's, which is less advanced but which is second in the world in terms of investments. Thanks to Ariane (60 percent of shares) and a multitude of European or international cooperation programs, and thanks also to the new Hermes space shuttle project, for which Aerospatiale will be the prime contractor, France appears as a better challenger for the United States.

Competition

The proof is that Ariane has been chosen to launch Spot. In competition with the American shuttle, it has garnered nearly 50 percent of the world's orbiting market. The last contract recently signed to launch Intelsat 6 (in 1990) brings the order book of the European rocket to 28 satellites to be launched, for a value of 7.9 billion francs. Forty firm orders have been entered since 1980, for a total of 10 billion francs, which is equivalent to the development costs; not to mention 6000 jobs assured in Europe, 3000 of them in France.

A good score, which however hides one flaw: the lack of competitiveness of French satellite manufacturers. Except for two Arabsat satellites for the Arab League, and Tele-X, a direct television satellite ordered by Sweden, France has not obtained any true exportation contracts. On the other hand, the Americans and Canadians have won all the bids for communication satellites.

There are many reasons for this lack of aggressiveness: the European market is too small; intra-European competition, and even French-French competition between Matra and Aerospatiale; the hold of the government on contracts is too strong; and so on. All of them obstacles which prevent any launch platform standardization and which multiply costs.

If the French and European industries want to transform their technologic success into a commercial success in this field, "prices will have to be reduced by 20-25 percent," say the OECD experts. In space as in any industry, know-how is not enough.

11,023

CSO: 5500/2582

FRANCE

MATRA, SEP FORM COMPANY TO COMMERCIALIZE SATELLITE IMAGES

Paris ELECTRONIQUE ACTUALITES in French 24 Jan 86 p 6

[Text] The companies Matra and SEP have decided to form an economic interest group in the field of reception and processing of images from earth monitoring satellites. The name of this group is Image International. Its purpose is to coordinate commercial activities in France and abroad, to distribute tasks relating to contract execution and to orchestrate research and development programs on new products and systems.

Image International combines the experience of SEP in image processing and of Matra, which implemented the space segment of the French Spot program. It should be recalled that SEP has already installed six receiving and processing stations throughout the world, with the last scheduled for completion in Pakistan before the end of the year. In addition to the part on board the Spot satellite, Matra is involved in Pictral image processing and in Traster photogrammetric equipment. Its image processing, analysis and production equipment has also been sold throughout the world.

Although the civilian market for remote sensing by satellite is limited, in the long run, it should, according to SEP, comprise 30 to 35 stations. In addition, there will develop a market consisting of industrial users of images such as the petroleum industry. The processes applied to the images supplied by airborne remote sensing means also fall within the scope of the group. In the military field, SEP and Matra are working jointly on the French Helios Satellite program. Image International will also play the role of coordinator in this project.

12798/12232
CSO: 5500/2592

20 March 1986

FRANCE

PTT DRAFT BUDGET FOR 1986 UP SLIGHTLY OVER 1985

Paris ZERO UN INFORMATIQUE HEBDO in French 18 Nov 85 p 59

[Article by E. S.]

[Text] With 179.4 billion francs of net expenses, 6.2 percent more than in 1985, the PTT supplementary budget draft for 1986 is still the largest investment budget of the civilian ministries.

The total stipulated budget program authorizations amount to 42,390 MF (including 4800 MF for the electronics industry and 4210 MF for new technologies), to which should be added the authorizations for programs which will be financed by telecommunication financing companies to the extent of 2800 MF.

By itself, the total telecommunications investment budget amounts to 41,961 MF, consisting of 30,151 MF of program authorizations and 2800 MF of orders to be transmitted through financing companies.

Outside of the development of telephone subscriber revenues, which are growing more slowly, the investment budget will help satisfy the demand for new services through expansion of the electronic directory service, detailed billing, and so on.

Earth Stations

The Telecom 1 program will be allotted 280 MF to finance the engineering and installation of 65 earth stations. The cable plan will receive 2800 MF.

Together with these conventional investments, PTT will bring 4800 MF as its contribution to the development of the electronics industry. The three agencies included in the civilian research budget--ADI (Association for Computer Development), INRIA (National Institute for Research on Data Processing and Automation), and CESIA [expansion unknown]--are allocated 315 MF. The budget also includes 4210 MF for financing the investment operations of CNES (National Space Studies Center).

In terms of revenues, 917 MF are expected from mail operations, with a surplus of 4458 MF forecast for telecommunications. The fiscal year surplus forecast for the supplementary budget thus adds up to 3541 MF, and the financing requirements to be covered through borrowing, to 20,710 MF.

11,023

CSO: 5500/2582

FRANCE

REFORM OF PTT EXAMINED

Paris LE MONDE in French 31 Jan 86 p 28

[Article: "PTT Reform: To Adapt in the Face of Worldwide Deregulation"; followed by remarks signed E.L.B.]

[Text] What strategy should the PTT adopt to face rapidly changing technologies and worldwide deregulation? Should they give up their monopoly? Go private? Sever the ancestral links between the post office and telecommunications? The reform of the PTT decided by the government (the application decree was published in the JOURNAL OFFICIEL dated 29 January) is intended to be "a French answer" to these questions.

The philosophy adopted is to strengthen a public service "which has been tried and tested." The French Post Office has difficulties, that is true, but it works far better than in some other countries, the United States for instance. As for the telephone network, it is undeniably modern, the authors of the reform explain. The State must therefore remain present while "restricting itself to what is essential" and making a clearer distinction between its functions as author of regulations, network manager (Post, Telecommunications and TDF) and, since 1983, supervisor of the electronics industries. It is important first to think things over before yielding to the pressures of multinational companies which are pushing for deregulation, and not to modify statutes haphazardly considering that, anyhow, the socialists have promised to preserve the unity of telecommunications and the Post Office and that unions are fiercely opposed to their separation. If the PTT must adjust themselves to the new rules of competition, they must do so "as a whole," as the present statute is not seen as an obstacle to behaving "like a corporation," the authors of the reform explain.

To that effect, the following were created and placed directly under the minister's authority: a directorate of joint affairs, personnel and social affairs, budget and accounting, which the council of ministers entrusted to Mr Andre Darrigrand on 29 January; and a general delegation to strategy, entrusted to Mr Jean-Claude Michel, at present head of Mr Mexandeau's staff.

As a result, the ministry will now include four major directorates with those of telecommunications and the Post Office.

The general delegation to strategy "shall study and propose" strategic orientations at national and international level, "prepare" the general principles of PTT regulations, "make sure" that subsidiaries operate in compliance with the overall strategy, and supervise the telecommunications, data-processing and office-automation industries in liaison with the Ministry of Industrial Redeployment.

[Remarks]

Will this "French solution" be enough? It will of course all depend on the quality of the relations that will be established with the Ministry of Industrial Redeployment and in particular with the general directorate of telecommunications (DGT) which is powerful, jealous of its prerogatives and concerned about this form that, it believes, restricts its power or at any rate delimits it. It had become urgent for the French Telecommunications Administration to define a consistent strategy, as this administration is too dependent on the budget concerns of the Ministry of Finance and on the maneuvers of the nationalized group, the CGE, which supplies its equipment.

The DGT has lost some of its power since 1981, for political reasons but also because this administration was cumulating too many regal functions. The reform adopted could result in a new loss of influence, which would be detrimental, or on the contrary it might strengthen the DGT in the role of an operator of modern networks, with a statute that, in any case, will have to be adjusted. It will all depend on the men chosen, but also on a needed decline of the influence of politics and ideology on this sector.

9294

CSO: 5500/2587

FRANCE

RPR OUTLINES TELECOMMUNICATIONS PROGRAM

Paris LE MONDE in French 6 Feb 86 p 27

[Text] On 4 February, the RPR presented its proposals for communications, a sector to which Jacques Chirac's party will now assign major political importance and which will become a hot item after the March elections. Five commissions of experts worked on what Jacques Toubon called a "Bredin anti-relationship" when trying to describe the complete remodeling of the audiovisual scene. A difficult exercise since, according to the word from RPR, it is necessary to do "more and better" than the Socialist government, whose activities in this field continue to overflow. While it remains very close to the main principles defined by the joint platform of the opposition parties, the RPR program analyses in detail the denationalization process and its financial consequences.

The Fate of "5" and "6"

These two new private stations remain but will probably change ownership and specifications. The law that the RPR intends to introduce at the very beginning of the new legislature will abolish the system of public service concessions. Before the summer, an independent authority, the National Commission of Communications and Freedom (CNCL) will issue licences at the end of a new consultation. This commission, which will replace the High Authority, will comprise 12 members, with 6 magistrates and 5 professionals, appointed by the political authority. In order to avoid abruptly depriving viewers of the new images, an "interim operation" will be put into effect to smooth the transition from the old to the new owners.

The Disengagement of the State

It is the CNCL and not the government which will conduct the privatization process in the audiovisual field. The new independent authority will ensure "general regulation of electronic communications" (issuance of national and local licences, policing of frequencies, public service budget management). It will decide the schedule and methods of denationalization of two of the public channels, of Havas and Sofirad. Telediffusion of France (TDF) will lose its monopoly over broadcasting of private TV stations but will continue to be in charge of broadcasting public TV and of coverage of the gray areas, financed by fees. The office of the Director General of Telecommunications, transformed

into a national telecommunications company, will maintain its monopoly over construction and operation of telecommunications networks but will be competing with the private sector for supplying all services, including telephone.

Public Service

Financed exclusively by license fees, its role will be to "broadcast quality programs to the greatest number of viewers." It comprises a national TV channel and three national radio programs (France Inter in FM and long-wave, France Culture and France Musique). Most of the local Radio France stations will be abandoned. On the other hand, Radio France abroad and Radio France International will be maintained.

Assistance in Creation

The development of the national program industries is a major stake of the RPR program, which establishes a production minimum of 500 hours of original French fiction to be reached in 5 years. The support item implemented by the current government is extended as are the broadcasting rules for films over TV channels. Without explicitly raising the problem of quotas, the RPR's position is one of "protection of the national producers from imports of foreign programming." It primarily wants to make the market healthier by separating the functions of producer and diffuser: TV channels will be able to produce only 25 percent of their programming and the requirement to order from the French production company will be eliminated.

The New Media

The RPR intends to make choices between different technological channels. Cable is clearly privileged as the "solution of the future." Local municipalities will keep the initiative for cabling but will no longer have a predominant role in operations. Construction and marketing of the networks may be awarded to private enterprises. The direct TV satellite, which is no longer contested, has been delayed: TDF1 has already been started and will be launched, but its succession is no longer guaranteed. Finally, Channel Plus will be subjected to a general audit to determine whether a scrambled pay channel should be maintained or whether it should be transformed into a conventional commercial channel.

The audiovisual landscape thus portrayed by RPR will, in the short run, comprise 5 or 6 private channels in addition to local TV stations. Is the advertising market large enough to support these? RPR officials seem very confident of the flexibility of advertising budgets and of the ability of the written press to launch an organized front against this new competitor. Can enough French capital be mobilized to buy back the public chains (700 million francs each), Havas (2.4 billion francs), Sofirad (850 million francs)? According to RPR officials, the CNCL will determine the rate of privatization, keeping into account the financial environment.

Mr Chirac's party, following good political logic, prefers to emphasize the immediate profits from such liberalization: 6 to 7 billion francs in revenues for the government, a 32 percent reduction of the fee, elimination of the tax on videotap recorders and creation of 60,000 to 80,000 jobs per year in the communications field beginning in 1988.

FRANCE

PTT TO LAUNCH TELETEx SYSTEM

Paris ZERO UN INFORMATIQUE HEBDO in French 23 Dec 85 pp 1, 4

[Article by Eric Sorlet: "Electronic Mailing Takes Off"]

[Text] PTT authorities have just announced the official market entry of Teletex, a new service for written communication. Every year more than 10 billion original documents and some 147 billion pages circulate in the French industrial world. This traffic requires efficient communications combining speed and quality of transmission. The improvement in mail processing, however, does not necessarily guarantee quick and universal exchange of documents. Moreover, the incompatibility of different brands of machines also restricts their communication potential at a time when the speed of information circulation is becoming a strategic asset for companies. However, there is a solution. On the basis of an international standard defined in 1980, the PTT's initiated the Teletex service last July. This system can be described as an international electronic mail service for companies, which relies on the automatic transmission of documents between the memories of two systems linked either by the telephone network of Transpac.

One might wonder why the DGT [General Directorate of Telecommunications] has shown such discretion up to now about a service which could tangibly modify the working methods of the tertiary sector and which is already operational in 14 countries (South Africa, the FRG, Austria, Canada, Denmark, the United States, Finland, Great Britain, Italy, Japan, Luxembourg, Norway, Sweden, and Turkey) and has been announced in 23 others.

This market entry with no fanfare may perhaps be explained by the competition that an electronic mail system might pose to the postal service. Whatever the reason, the DGT now seems determined to ensure the evolution of its latest product by launching a publicity campaign around the Teletex logo: a green woodpecker.

The choice of this bird is undeniably more appropriate than that of a carrier pigeon, considering the rattling of the printers!

The objective is ambitious, because the plan is to move from the 500 machines presently in service to an installed total of 7,200 terminals by the end of 1986 and 70,000 terminals by 1990. For terminal manufacturers, who will be

the only ones to market the Teletex machines, this new market is estimated at Fr 11 billion.

Thanks to international standardization, the Teletex service paves the way for electronic mail exchanges between companies. This system has many advantages. In the first place, the use of international standards ensures the compatibility of different terminals, whatever the model, brand, or location in the world. Automatic memory-to-memory transmission reinforces the confidentiality and security of the exchanges.

Such transmitted mail maintains the same quality as commercial mail. The transmission speed (one A4-sized page in 10 seconds) allows for considerable savings in transmission expenses: One page transmitted within Paris costs to Fr 0.77; from Paris to Marseilles the cost is Fr 1.54.

Furthermore, the full-time availability of the service makes it possible to take advantage of the hourly discounts granted by the networks. Finally, the service gives access to the Telex network, thus enlarging communication potentials.

A Universal Service

While the terminals can be obtained from the manufacturers, the Teletex system itself is subject to a subscription fee paid to a DGT sales office. In return, the commercial service offered by the DGT includes five types of service:

-The label: Delivered by DGT to manufacturers who have requested it, this label guarantees the conformity of terminals to the standard. Up to now, four French manufacturers (SAGEM [Company for General Electricity and Mechanics Applications], CGCT [General Company for Telephone Engineering], Telic and SMT/Sitintel) have received this label for dedicated terminals, the cost of which ranges from Fr 60,000 to Fr 100,000 (excluding taxes).

An external adapter, developed by Sitintel and costing between Fr 22,000 and Fr 33,000 according to the number of terminals connected, is also granted a label. After testing, this black box may allow adaptation of an existing group of word processors and PC-compatible microcomputers operating on MS-DOS to the new Teletex system.

Other manufacturers, such as Marben, Philips and Ericsson, are still waiting for labels.

-The choice of connecting network: The user can choose to connect the Teletex terminals to the switched telephone network (RTC) or to Transpac. Taking into account the fiscal impact of a subscription, the Transpac option--though apparently more economical--may only be profitable for large quantities of mail traffic, on the order of about 50 pages per day.

Nevertheless, gateways between the two networks allow communication with every Teletex terminal, regardless of the connecting method used.

-The interconnected Teletex-Telex system (SITT): This system is a connecting gateway between Teletex and Telex. In this way, subscribers to either system can communicate with each other. For Teletex subscribers, this represents 1.6 million supplementary correspondents (120,000 in France), or almost all business communicators.

This system executes all speed and protocol conversions between the two terminals. Moreover, to be sure that the message has actually reached the addressee, the Teletex subscriber can request a delivery receipt.

When either the network or terminal are busy, the SITT renews the call every quarter hour; if the message is not delivered within 4 hours, the system is obligated to notify the transmitter of non-delivery.

-The Teletex Operation and Management Center (CEGT): The CEGT contributes to service quality and security by making the terminals operational by recording an identification number in the terminal's memory and by synchronizing the internal clock.

Furthermore, the CEGT periodically tests all machines to check their connection to the network, their ability to exchange documents, and the validity of their identification numbers. Finally, it provides assistance to users.

-The directory: A directory listing all subscribers to the service is accessible through Minitel. In addition, all subscribers will be listed in a hardcopy directory scheduled to be published in 1986.

When installed in offices, Teletex constitutes a real productivity tool. Though efficient, the system still needs to undergo many improvements, such as graphics, which will permit transmissions of signatures, logos, or diagrams, or such as multiple routing of documents which could be provided by services of additional value such as the bulletin board to be instituted on the Transpac network.

[Boxed Section]

The Teletex Standard

The Teletex standard was defined in 1980 by the CCITT [Consultative Committee of International Telephone and Telegraph]. It specifies the functioning of terminals used either in local or communication mode.

In local mode, the choice of possible functions and their applications is left to the manufacturers' initiatives. The standard only imposes the following characteristics: the paper size (A4 and A4L), the list of 309 Latin characters, the parameters for page display, and the capability of composing texts in Telex format.

The transmission mode, however, is strictly defined by the following standards:

-Automatic transmission from the transmitting to the receiving memory, 24 hours a day;

-The reception of documents must not disturb local work;

-The terminals connected to the RTC must be equipped with a V27 ter modem at 2,400 BPS half duplex. On Transpac system, the transmission speed may be higher;

-Procedures must ensure the exchange of completely identified documents which are strictly identical to the message sent, in content, format, and presentation;

-Transmission of one page in 10 seconds;

-Each terminal subscribing to the system is assigned a specific identification number.

25035/12948

CSO: 3698/2597-A

FRANCE

DIFFICULTIES IN CABLING PLAN REVEALED

Paris LE MONDE in French 8 Feb 86 p 25

[Article by Jean-Francois Lacan: "Communications: Mr Mexandeau Inaugurates the Montpellier Interactive Network"]

[Text] On 6 February, Mr Mexandeau, minister of PTT, inaugurated the first facilities of the Montpellier videocommunication network. This full-fledged offshoot of the 1982 cable plan, the first truly interactive network if we except the experimental Biarritz network, will start operating during the second half of this year and all households in Montpellier will be connected to it by 1989. With a star configuration designed by Velec CGCT and using only fiber optic cables, it will offer a full range of new services: televideotape library, pay-per-view programs, teleshopping systems, dedicated corporate and educational links. The National Center for Telecommunications studies has allocated a budget of F 20 million to develop all these services which will then be offered on all other fiber optic cable networks.

The minister of PTT took this opportunity to reaffirm the government's determination to continue its efforts to meet the industrial challenge of the cable plan. Sixteen towns representing a total of 2 million households to be connected have already signed contracts. Orders for 1.1 million lines have been placed with manufacturers, half for fiber optic technology and half for the more traditional coaxial technology. Mr Mexandeau's goal in encouraging the General Directorate of Telecommunications (DGT) to expand the legal framework of cable television is to fully associate private operators to the management of the new services which, in his opinion, represent an essential factor in the commercial penetration of cable television. On that same day, this was also the subject of a debate at the International Symposium on Scientific Audiovisual Techniques organized by the CNRS.

A Difficult Turn for the Cable Plan

The start of the Montpellier network may look like a major victory for the concept underlying the cable plan of November 1982: a technological gamble on fiber optics, an alliance of traditional television and modern electronic communication services. After 3 years of polemics, the DGT and the manufacturers which followed it are now in a position to show that interactive television is a reality and that cable networks are indeed the new highways of

the service society that is emerging in the last decades of this century. Yet, the cable plan has never been as threatened as it is now.

The opposition's platform provides that the PTT would lose their monopoly on cable television, that local communities would be free to choose the technology to be used, and that the DGT would have to compete with private operators for network ownership and management. Thus, as elections are approaching, the DGT, that formidable power which had thrown its full weight into the fiber optic battle, seems all of a sudden to be plagued with doubts and divided by conflicting strategies. In spite of the minister of PTT's statements, many DGT administrators want to return to the traditional coaxial technology to cope more effectively with the forthcoming deregulation and competition. Even the towns most determined to use fiber optic cables find it difficult to have their orders taken into consideration.

This turnabout is a cause for concern, all the more so as the United States, the land of cable television par excellence, are starting a trend in the opposite direction. Over there, operators have seen their market stagnate in the past year. The receipts of pay-television channels are in sharp decline, cable television subscriptions do not exceed 60 percent of American households, and cable television operators no longer make enough profits to bear the high cost of cabling large urban centers.

The American cable television industry suffers from the competition of 23 million videotape recorders and 1.5 million parabolic antennas which receive satellite broadcasts directly, and even from the marked improvement in traditional radio-relay television programs. To break out of this deadlock, the profession is throwing itself headlong into the marketing of new interactive services, in particular pay-per-view cinema movies and major sports events. But this strategic redeployment is hindered by the coaxial network technology which makes interactivity too restricted and too costly. And American experts are beginning to dream of the benefits of fiber optics.

The crisis of the American cable-television industry may represent an opportunity for the French industry. It is also a lesson for all those in France who are concerned about the financial viability of the future networks. Many local communities (Montpellier, Gennevilliers, Niort, etc.) have already understood that cable television will not attract the public if it is content with broadcasting traditional television channels. Rather than competing with the existing media, they count on fiber optics and on the new services to break even. Receipts would then no longer depend on subscriptions, but on billing according to consumption, as with the telephone or data communications.

This strategy, however, stumbles on the excessively slow growth of cable subscriptions. How can such an operation become profitable with only 10 or 20 percent of subscribers for some tens of thousands of outlets installed, and when these subscribers already pay a connecting charge of F 140 per month. Aware of the problems, large financial groups (Deposit and Consignment Office, General Water Company) which have embarked on cable operations are now considering a new scenario: connecting all households to a basic program (the

six existing channels) for free, so that they would then have a broad base on which to develop the new services.

According to an official of the Deposit and Consignment Office, a free network connecting 100,000 households could break even if each household were to devote F 75 per month to pay programs. The operators are not the only ones to be interested in the economic advantages of this scenario. They are also attractive for movie-making professionals who can thus look forward to a more open and more profitable distribution of their movies and are ready to program them on these channels before they are offered on television or even published as videocassettes.

Free cabling for all and pay-per-view consumption: a consistent model is emerging as an answer to all those who questioned the choice of fiber optics for mere cable television networks. But it goes against the strategy of many at the DGT, who are now more eager to return to the solid functions of the DGT monopoly. It also runs against the tide of liberalism that comes from the opposition. It remains to be seen whether we can just forget about the F 5 billion already invested in fiber optic cable networks and give up a formidable industrial and technological challenge merely for political reasons.

9294

CSO: 5500/2613

20 March 1986

FRANCE

STATE OF PRIVATE LOCAL RADIO REVIEWED

Paris LE MONDE in French 1 Feb 86 p 26

[Text] Cannes--The health of privately owned local radio stations can no longer be gauged by the mood of a handful of Ile de France leaders. The provinces are no longer a desert compared to a Parisian Eldorado. The 20th MIDEN [exposition] has demonstrated that innovation and dynamism in France's local radio stations also develop in the provinces.

During the debates and seminars of the MIP radio, during professional meetings, it was the voices of the regions which were heard. In the halls of the exposition, near recording companies and in their own booths, it was a handful of commercial radio stations--there were of course few "associated" stations--which stood out. And even if the general impression tended to indicate that at the end of 5 years "the heroes are a little tired," it is still in the regions that there remains some passion. Passion for the work and the organization of the profession--it is the radio stations in the provinces that breathed new life into the dust-covered SIRTII (Inter-Professional Syndicate of Independent Radio and TV Stations); it is they which created a first label in Cannes in order to record themselves the artists they liked. "The Paris radio personalities often consider us to be peasants," stated Georges Polinsky, director of Radio Nantes. "This does us credit--after all, milk comes from the plains of the Ukraine."

However, the number of privately owned local radio stations in good health today is small. For the 20 or so showing a profit, there are hundreds of others in financial difficulty. The laws of competition are savage and difficult and advertising is slow in coming. Although FM radio stations reach about 20 percent of French listeners, they still only attract 14 percent of radio advertising expenditures. This has resulted in concentration and in a tendency to select the networks, which offer economic channels and are easier to work with in the view of the advertisers.

But malcontents will protest that networks are supposed to be prohibited. This is likely, since the law forbids an individual to control more than three radio stations. Nonetheless, there are about 10 networks operating at the national level, and they loudly maintain that they represent the future. "Upcoming radio licence renewals will provide the opportunity to bring order to this situation," stated Mrs Michele Cotta, chair of the High Authority, during a debate.

Order... The word brought smiles. "Aren't we rather in a state of complete deregulation?" asked someone, citing the race among the very large broadcasters, which has developed a momentum of its own, and the audacity of the new pirates who do not hesitate to park on the available frequencies. "This situation is dangerous," declared Eric Hauville, director of RVS in Rouen. We are enterprisers and are attempting to exercise this profession as best we can. But we need a stable legal framework and a set of established rules of the games to follow."

Many questions that the radio stations would like to see answered rapidly still remain in gray areas. What about the resale of stations? The corporate by-laws? Transfer of a partnership's capital and activities to a corporation? Tax consequences and the rules of labor law? Networks and satellite use? The managers of these stations asked for a more stringent approach and more clearly defined rules.

Mrs Michele Cotta, who requested this direct dialogue with all of the radio stations, seemed responsive to the questions and suggestions raised by these young managers from Nantes, Rennes, Rouen and Lyon. She suggested that the general state of FM be organized to address the pending legal and technical problems. "When?" immediately queried the station representatives, pens poised over their notebooks.

12798/12232

CSO: 5500/2593

FRANCE

UNCERTAIN FUTURE SEEN FOR LOCAL TV

Paris LE MONDE in French 1 Feb 86 p 26

[Text] The announcement of the concession awarded to a new private national TV network, "6," with music as its dominant theme, may signify the demise of local stations as promised by the president of the Republic in January 1985. The law ratified by Parliament last December contradicts this statement. However, the existence of two multi-city networks that take up frequencies as well as advertising resources makes some of the applicants fear the worst. One of the pioneers, attorney Jean-Louis Bessis, has just filed an action against "5" which he believes is damaging to his "Channel 5" project. This lawyer, a former member of the National Council for Audiovisual Communications (CNCA), filed a suit against TDF after the station's equipment was seized in June 1985; it was dismissed on 28 January. Mr Bessis was under suspicion at the time but there were no grounds for prosecution. In another incident, the director of BMB Massif Central Television at Clermond-Ferrand was sued for broadcasting without authorization (judgment adjourned until 4 February).

For the time being, the High Authority on audiovisual communications has recorded some 450 applications for authorization. Until 3 March, the International Crossroads for Communications (CIC) and the Delegation for Territorial Development and Regional Action (DATAR) will be displaying at the CIC the "brochures" of 55 of these applicants, who will be able to develop their ideas on a "life-size scale" through subsidies (LE MONDE, 10 January).

The High Authority cannot hasten the pace. The study was initiated by Tele-diffusion of France (TDF); it will result in a report on the possible authorizations (as a function of the applications recorded) and on the possible frequencies, city by city. In addition, the High Authority must await the decision of the CNCA on the procedure to be followed. The "nine wise men" committee a month and a half will be needed for preliminary research. Decisions can be made on authorizations, after an in-depth analysis of each application and of the first installations. It therefore does not seem likely that TV stations will be licensed before the end of the second quarter.

By that time, the political context may have changed; the High Authority itself may come into question and part of the already turbulent audiovisual sector under scrutiny if the opposition is returned to power.

12798/12232
CSO: 5500/2593

FRANCE

BRIEFS

MINITEL PROVIDES NEWS SERVICE--Since 20 January, the 140,000 Parisians who already own a Minitel can get information on Paris municipal services and on the city's activities by dialling 36-14-91-66 followed by the name "Paris." The service operates around the clock seven days a week. It provides information on the statute of Paris (mayor, Paris Council, arrondissement councils), administrative procedures, arrondissement halls, housing, sanitation, social services, health (hospitals and Social Security), education, jobs, cultural activities (workshops, museums, conservatories, libraries), sports, parks and gardens, everyday life (medical emergencies, churches, etc.). Minitel owners can also get on their screen "news" from city hall providing information on public works projects, traffic, cultural activities, the agenda of the Paris Council, competitions for jobs in the administration. Finally, municipal services may be asked questions which they will answer on the Minitel screen within at most 48 hours. These three services are provided by the city free of charge, but the calls are billed by the PTT at the rate of 77 centimes for each two minutes. The average inquiry takes 6 minutes. Minitel Paris, which has been in operation for 20 months, is now accessed 300 times per day (especially between 17 and 21 hours) and queried 20 times per day. [Text] [Paris LE MONDE in French 11 Feb 86 p 21] 9294

CSO: 5500/2613

20 March 1986

NORWAY

BRIEFS

FIRMS PARTICIPATING IN TELE-X--The Norwegian and Swedish Telecommunications Services will in the fall invite large enterprises in both countries to participate in experiments with the Tele-X satellite, which is scheduled to be launched in the summer of 1987. The Norwegian and Swedish Telecommunications Services will first approach enterprises which are in need of internal communication between main offices and local offices or subsidiaries located elsewhere. [Text] [Oslo ARBEIDERBLADET in Norwegian 16 Sep 85 p 33] 7262

CSO: 5500/2580

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